YAMAHA MBK

XN125 2000
5MF1-AE2

XN150

SERVICE MANUAL

EASM0000

XN125 / XN150
SERVICE MANUAL
© 2000 by MBK Industrie
2nd edition, April 2001
All rights reserved.
Any reproduction or unauthorized use without the written permission of MBK Industrie is expressly prohibited.

EASM0001

NOTICE

This manual was produced by the MBK Industrie primarily for use by Yamaha and MBK dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual. Therefore, anyone who uses this book to perform maintenance and repairs on Yamaha and MBK vehicles should have a basic understanding of mechanics and the techniques to repair these types of vehicles. Repair and maintenance work attempted by anyone without this knowledge is likely to render the vehicle unsafe and unfit for use.

MBK Industrie is continually striving to improve all of its models. Modifications and significant changes in specifications or procedures will be forwarded to all authorized Yamaha and MBK dealers and will appear in future editions of this manual where applicable.

NOTE:
Designs and specifications are subject to change without notice.

TECHNICAL DOCUMENTATION
MBK INDUSTRIE

EAS00005

IMPORTANT MANUAL INFORMATION

Particularly important information is distinguished in this manual by the following.

⚠ The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

⚠ WARNING Failure to follow WARNING instructions could result in severe injury or death to the scooter operator, a bystander or a person checking or repairing the scooter.

CAUTION: A CAUTION indicates special precautions that must be taken to avoid damage to the scooter.

NOTE: A NOTE provides key information to make procedures easier or clearer.

EAS00007

HOW TO USE THIS MANUAL

This manual is intended as a handy, easy-to-read reference book for the mechanic. Comprehensive explanations of all installation, removal, disassembly, assembly, repair and check procedures are laid out with the individual steps in sequential order.

① The manual is divided into chapters. An abbreviation and symbol in the upper right corner of each page indicate the current chapter. Refer to "SYMBOLS".

② Each chapter is divided into sections. The current section title is shown at the top of each page, except in Chapter 3 ("PERIODIC CHECKS AND ADJUSTMENTS"), where the sub-section title(s) appears.

③ Sub-section titles appear in smaller print than the section title.

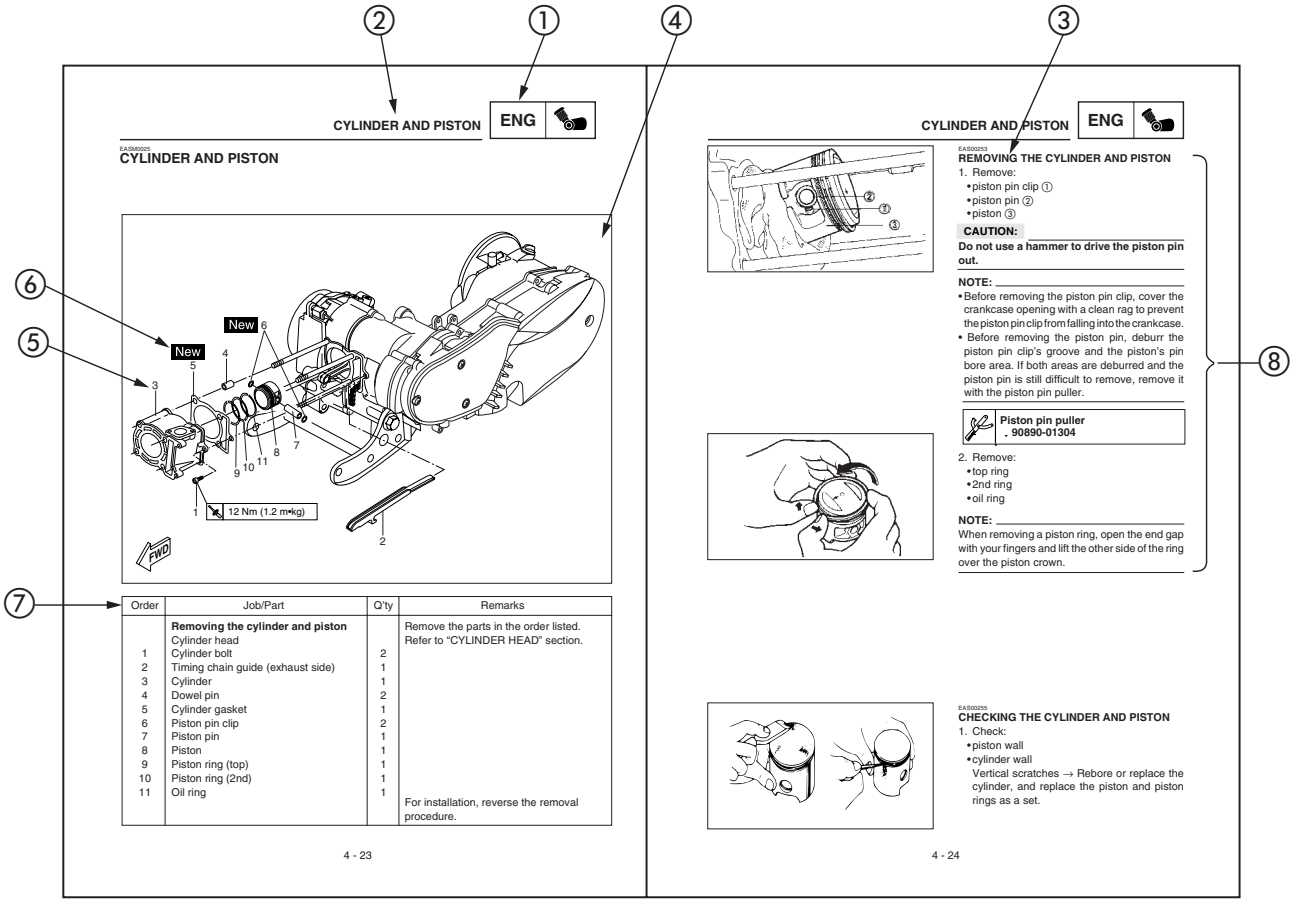
④ To help identify parts and clarify procedure steps, there are exploded diagrams at the start of each removal and disassembly section.

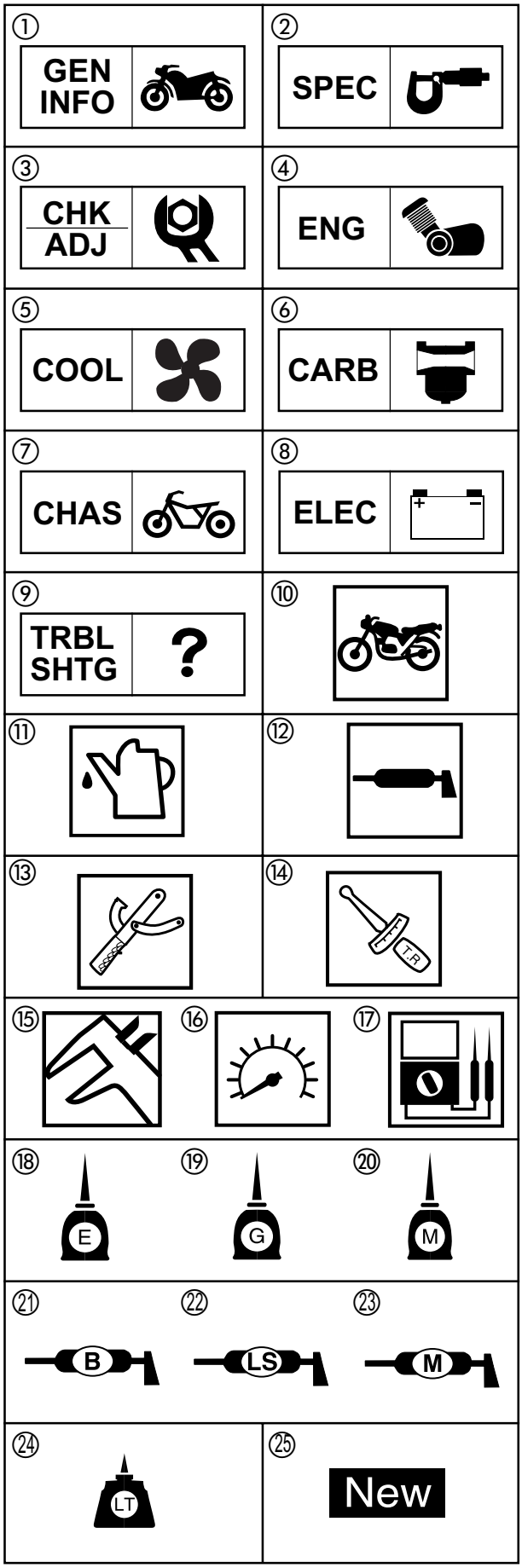
⑤ Numbers are given in the order of the jobs in the exploded diagram. A circled number indicates a disassembly step.

⑥ Symbols indicate parts to be lubricated or replaced. Refer to "SYMBOLS".

⑦ A job instruction chart accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.

⑧ Jobs requiring more information (such as special tools and technical data) are described sequentially.


②
①
④
③
⑥
⑤
⑦
⑧
CYLINDER AND PISTON
ENG
EAS00220
CYLINDER AND PISTON
New
12 Nm (1.2 m•kg)
FWD
Order
Job/Part
Q'ty
Remarks
Removing the cylinder and piston
Cylinder head
1 Cylinder bolt 2
2 Timing chain guide (exhaust side) 1
3 Cylinder 1
4 Dowel pin 2
5 Cylinder gasket 1
6 Piston pin clip 2
7 Piston pin 1
8 Piston 1
9 Piston ring (top) 1
10 Piston ring (2nd) 1
11 Oil ring 1
Remove the parts in the order listed.
Refer to "CYLINDER HEAD" section.
For installation, reverse the removal procedure.
4 - 23
CYLINDER AND PISTON
ENG
EAS00220
REMOVING THE CYLINDER AND PISTON
1. Remove:
• piston pin clip ①
• piston pin ②
• piston ③
CAUTION:
Do not use a hammer to drive the piston pin out.
NOTE:
• Before removing the piston pin clip, cover the crankcase opening with a clean rag to prevent the piston pin clip from falling into the crankcase.
• Before removing the piston pin, deburr the piston pin clip's groove and the piston's pin bore area. If both areas are deburred and the piston pin is still difficult to remove, remove it with the piston pin puller.
Piston pin puller
. 90890-01304
2. Remove:
• top ring
• 2nd ring
• oil ring
NOTE:
When removing a piston ring, open the end gap with your fingers and lift the other side of the ring over the piston crown.
EAS00230
CHECKING THE CYLINDER AND PISTON
1. Check:
• piston wall
• cylinder wall
Vertical scratches → Rebore or replace the cylinder, and replace the piston and piston rings as a set.
4 - 24



EAS00008

SYMBOLS

The following symbols are not relevant to every vehicle.

Symbols ① to ⑨ indicate the subject of each chapter.

① General information
② Specifications
③ Periodic checks and adjustments
④ Engine
⑤ Cooling system
⑥ Carburetor
⑦ Chassis
⑧ Electrical system
⑨ Troubleshooting

Symbols ⑩ to ⑰ indicate the following.

⑩ Serviceable with engine mounted
⑪ Filling fluid
⑫ Lubricant
⑬ Special tool
⑭ Tightening torque
⑮ Wear limit, clearance
⑯ Engine speed
⑰ Electrical data

Symbols ⑱ to ㉓ in the exploded diagrams indicate the types of lubricants and lubrication points.

⑱ Engine oil
⑲ Gear oil
⑳ Molybdenum disulfide oil
㉑ Wheel bearing grease
㉒ Lithium soap base grease
㉓ Molybdenum disulfide grease

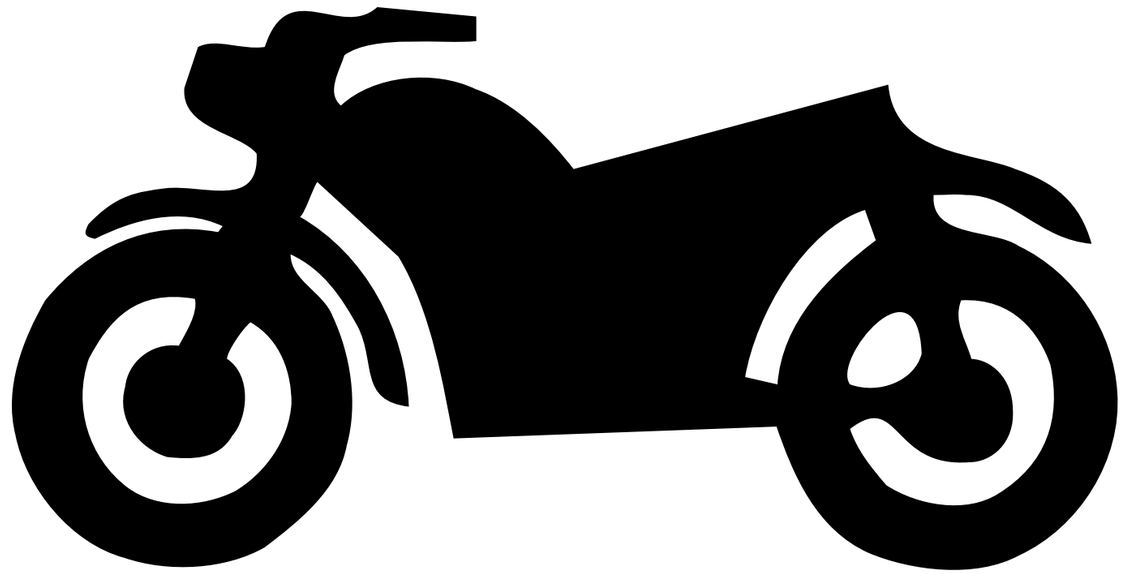
Symbols ㉔ to ㉕ in the exploded diagrams indicate the following.

㉔ Apply locking agent (LOCTITE®)
㉕ Use a new one

EAS00010

TABLE OF CONTENTS

GENERAL INFORMATION	GEN INFO 1
SPECIFICATIONS	SPEC 2
PERIODIC CHECKS AND ADJUSTMENTS	CHK ADJ 3
ENGINE OVERHAUL	ENG 4
COOLING SYSTEM	COOL 5
CARBURETOR	CARB 6
CHASSIS	CHAS 7
ELECTRICAL SYSTEM	ELEC 8
TROUBLESHOOTING	TRBL SHTG 9



GEN INFO

1

CHAPTER 1.
GENERAL INFORMATION

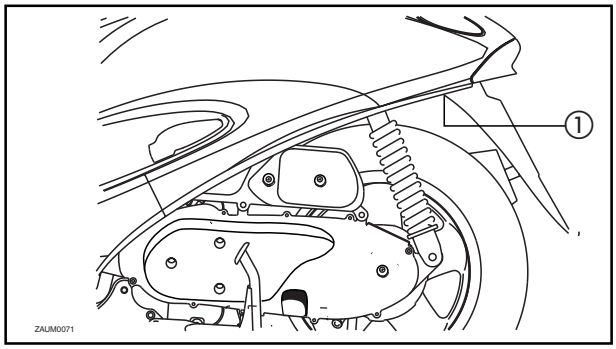
SCOOTER IDENTIFICATION 1-1
VEHICLE IDENTIFICATION NUMBER 1-1
MODEL LABEL 1-1

FEATURES 1-2
OIL INDICATOR LIGHT 1-2
ODOMETER/TRIPMETER READING MODE 1-2
BATTERY VOLTAGE/FUEL GAUGE 1-2
THE CLOCK 1-3
AUTO-CHOKE SYSTEM 1-3

IMPORTANT INFORMATION 1-4
PREPARATION FOR REMOVAL AND DISASSEMBLY 1-4
REPLACEMENT PARTS 1-4
GASKETS, OIL SEALS AND O-RINGS 1-4
LOCK WASHERS/PLATES AND COTTER PINS 1-5
BEARINGS AND OIL SEALS 1-5
CIRCLIPS 1-5

CHECKING THE CONNECTIONS 1-6

SPECIAL TOOLS 1-7



EAS00015

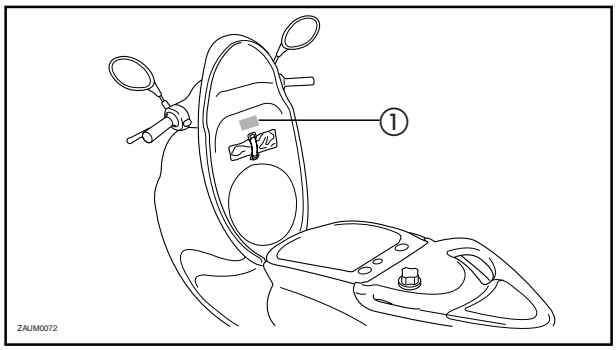
GENERAL INFORMATION

SCOOTER IDENTIFICATION

EASM0002

VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stamped into the frame.



EASM0003

MODEL LABEL

The model label ① is affixed under the seat. This information will be needed to order spare parts.

EASM0004
FEATURES

OIL INDICATOR LIGHT

• FUNCTION

Pulses (travel distance signals) from the speedometer are counted and cause the oil indicator light to come on at 500 km for the first time and thereafter every 3,000 km. In this way, the light indicates the time for oil change.

• RESETTING PROCEDURE

To reset the oil change indicator light

1) Press the “TRIP” button while turning the key to “ON”.
2) Release the button and the oil change indicator light will go off.

NOTE:

To reset the oil change indicator light before the periodic oil change interval has been reached, follow the above procedure.

ODOMETER/TRIPMETER READING MODE

The odometer and tripmeter can be set to count in either miles or kilometers according to the following procedure.

1) Turn the key to “ON”.
2) Press the “TRIP” button until the current mode appears in the dispaly:
   “CONT” (continental) for kilometer mode and “EnGL” (English) for the mile mode.
3) Press the “TRIP” button to switch mode.
4) Press the “TRIP” button for two seconds to confirm the setting.

NOTE:

- The odometer/tripmeter reading mode can be changed any number of times while the odometer reading is below 10, but it cannot changed anymore after the reading has reached 10.
- Switching between the mile and the kilometer mode does not change or convert the current odometer/tripmeter reading.

BATTERY VOLTAGE/FUEL GAUGE

When the key is turned to “OFF”, the voltage/fuel gauge indicates the battery voltage.

NOTE:

If the battery voltage drops to 10V, refer to “CHECKING THE BATTERY” section in chapter 3.

When the key is turned to “ON”, the voltage/fuel gauge indicates the amount of fuel in the fuel tank after indicating the battery voltage for two seconds.

THE CLOCK

• Setting the clock

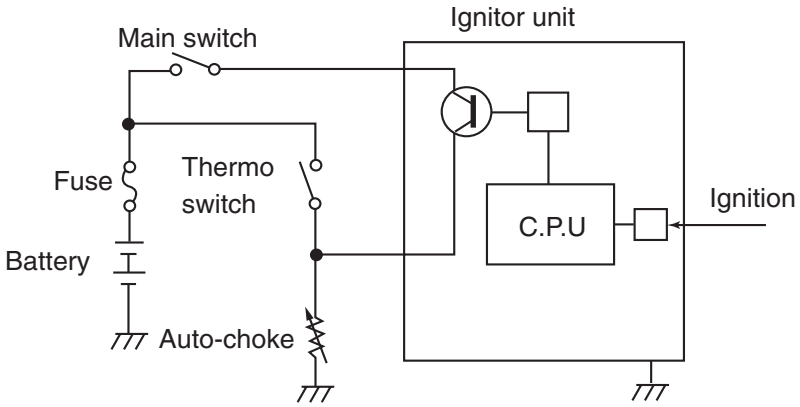
To set the clock:

1) Make sure that the key is turned to “OFF”.
2) Press the “TRIP” button for two seconds and the hour display will flash.
3) Press the “TRIP” button to set the hours.
4) Press the “TRIP” button for two seconds, and the first minute digit will flash.
5) Press the “TRIP” button to set the first minute digit.
6) Press the “TRIP” button for two more seconds, and the second minute digit will flash.
7) Press the “TRIP” button to set the second minute digit.
8) Press the “TRIP” button for two seconds to set the clock.

AUTO-CHOKE SYSTEM

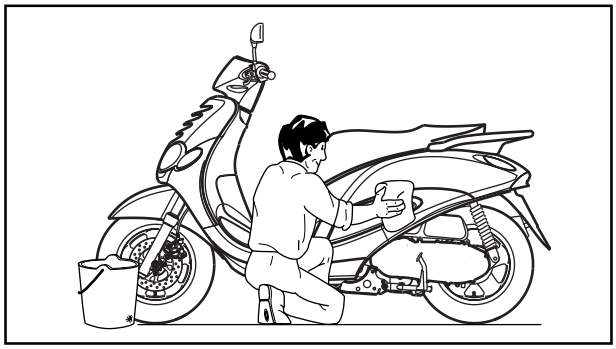
This system is the parallel connection of the ignitor unit circuit and the thermo switch as shown, detecting the engine temperature, and facilitates the restarting with the warm engine.

• Circuit diagram

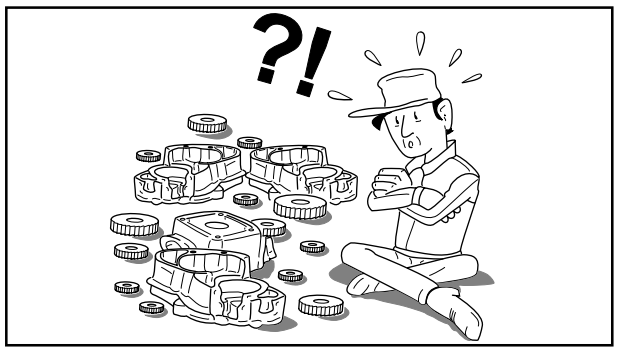


• Auto-choke operation

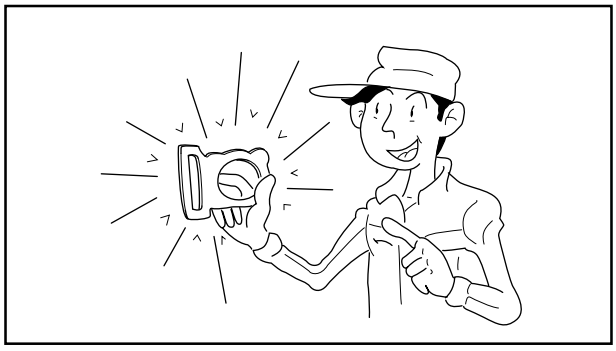
Engine condition	Start with the cold engine	Crank with the cold engine	Crank with the warm engine	Restart with the warm engine
Thermo switch	OFF	OFF	ON	ON
Ignitor unit circuit	OFF	ON	ON	OFF
Auto-choke	Activates	Activates	Not activate	Not activate



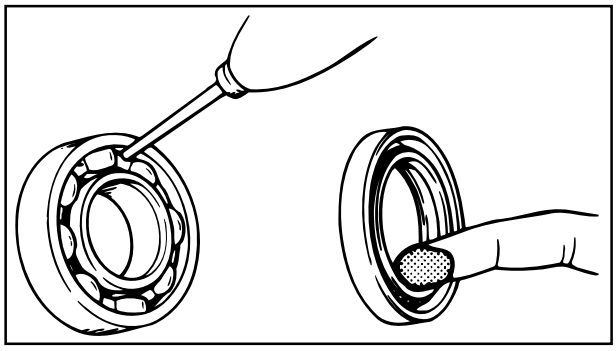
EAS00020
IMPORTANT INFORMATION
PREPARATION FOR REMOVAL AND DISASSEMBLY
1. Before removal and disassembly, remove all dirt, mud, dust and foreign material.
2. Use only the proper tools and cleaning equipment.
   Refer to the “SPECIAL TOOLS”.



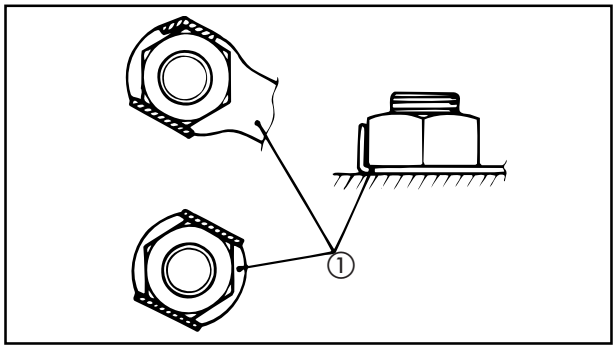
3. When disassembling, always keep mated parts together. This includes gears, cylinders, pistons and other parts that have been “mated” through normal wear. Mated parts must always be reused or replaced as an assembly.
4. During disassembly, clean all of the parts and place them in trays in the order of disassembly. This will speed up assembly and allow for the correct installation of all parts.
5. Keep all parts away from any source of fire.



EAS00021
REPLACEMENT PARTS
1. Use only genuine Yamaha and MBK parts for all replacements. Use oil and grease recommended by Yamaha or MBK for all lubrication jobs. Other brands may be similar in function and appearance, but inferior in quality.

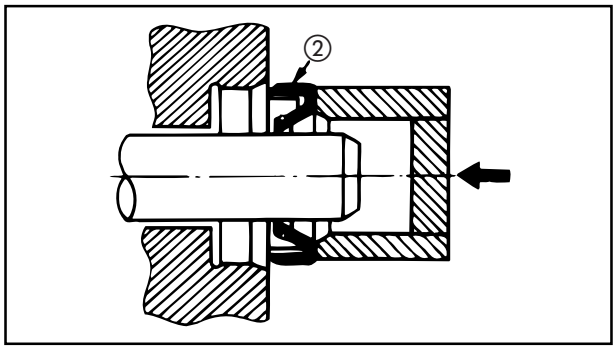


EAS00022
GASKETS, OIL SEALS AND O-RINGS
1. When overhauling the engine, replace all gaskets, seals and O-rings. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. During reassembly, properly oil all mating parts and bearings and lubricate the oil seal lips with grease.



EAS00023
LOCK WASHERS / PLATES AND COTTER PINS

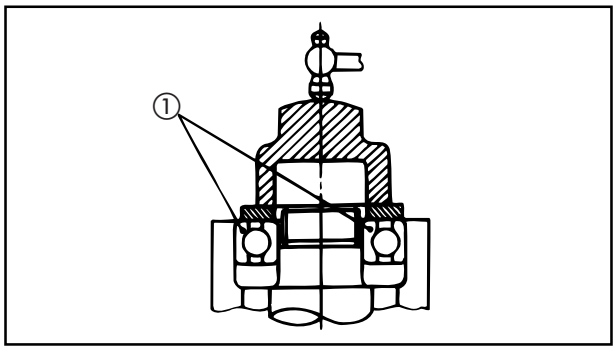
1. After removal, replace all lock washers / plates ① and cotter pins. After the bolt or nut has been tightened to specification, bend the lock tabs along a flat of the bolt or nut.



EAS00024
BEARINGS AND OIL SEALS

1. Install bearings and oil seals so that the manufacturer's marks or numbers are visible. When installing oil seals, lubricate the oil seal lips with a light coat of lithium soap base grease. Oil bearings liberally when installing, if appropriate.

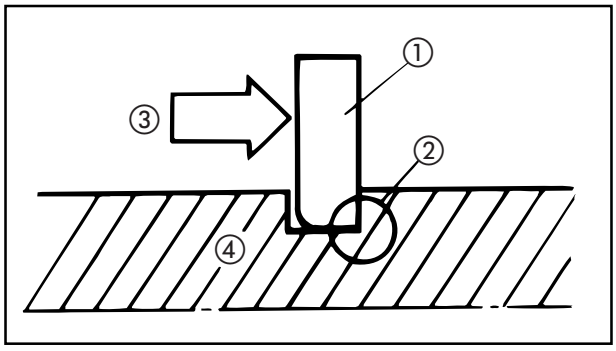
② Oil seal



CAUTION:

Do not spin the bearing with compressed air because this will damage the bearing surfaces.

① Bearing



EAS00025
CIRCLIPS

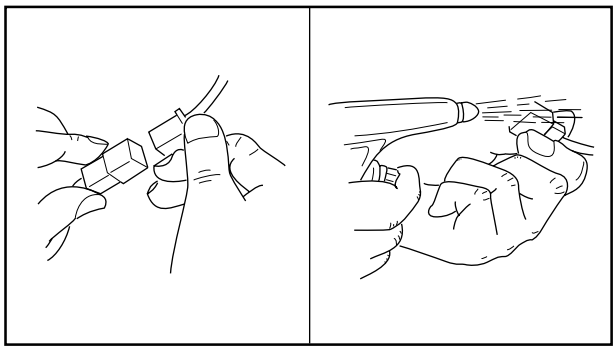
1. Before reassembly, check all circlips carefully and replace damaged or distorted circlips. Always replace piston pin clips after one use. When installing a circlip ①, make sure the sharp-edged corner ② is positioned opposite the thrust ③ that the circlip receives.

④ Shaft

EAS00026
CHECKING THE CONNECTIONS

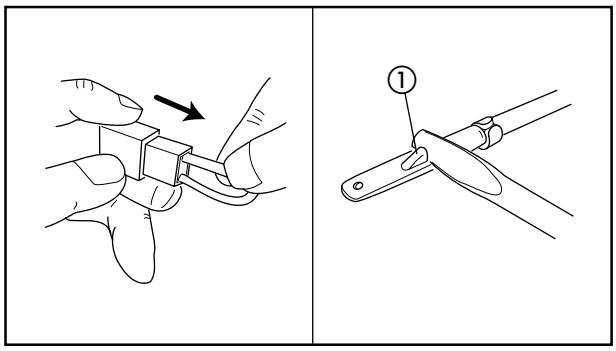
Check the leads, couplers, and connectors for stains, rust, moisture, etc.

1. Disconnect:
   - lead
   - coupler
   - connector



2. Check:
   - lead
   - coupler
   - connector

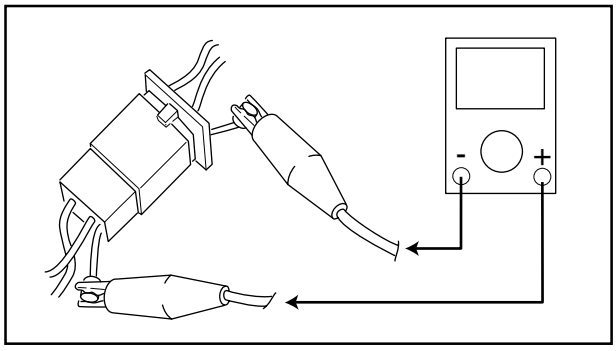
   Moisture → Dry with an air blower.
   Rust/stains → Connect and disconnect several times.



3. Check:
   - all connections

   Loose connection → Connect properly.

NOTE:
If the pin ① on the terminal is flattened, bend it up.

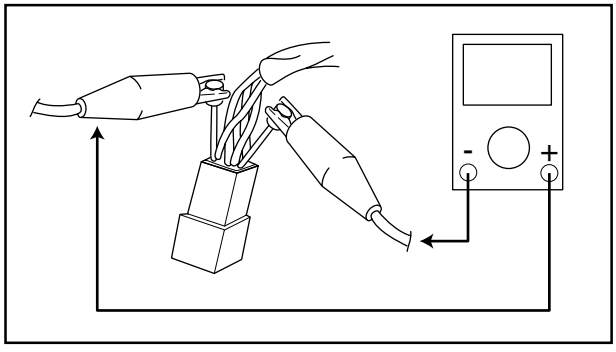


4. Connect:
   - lead
   - coupler
   - connector

NOTE:
Make sure all connections are tight.

5. Check:
   - continuity

   (with the pocket tester)

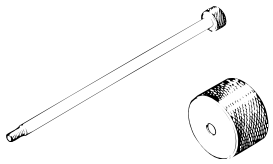
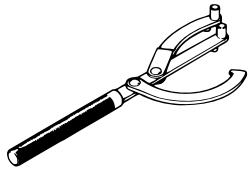
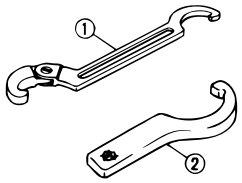
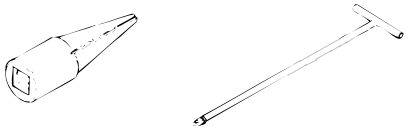
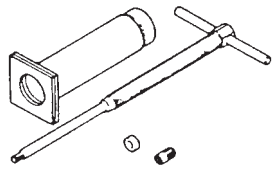
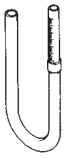
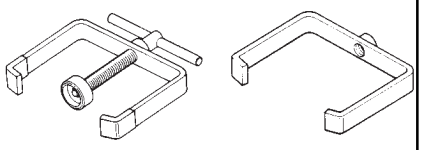


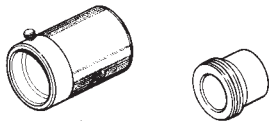
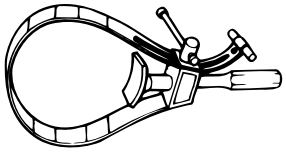
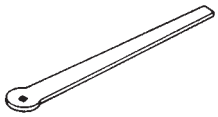
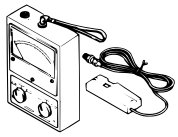
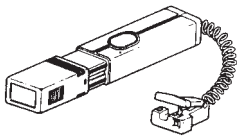
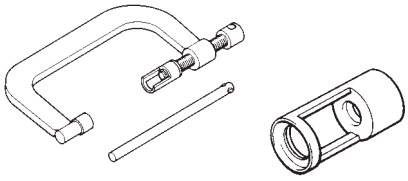
	Pocket tester **90890-03112**

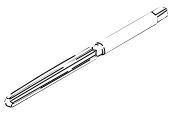
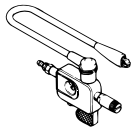
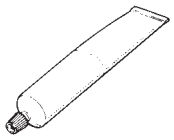
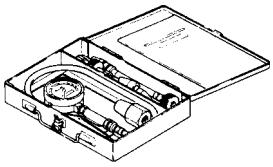
NOTE:
- If there is no continuity, clean the terminals.
- When checking the wire harness, perform steps 1 to 3.
- As a quick remedy, use a contact revitalizer available at most part stores.

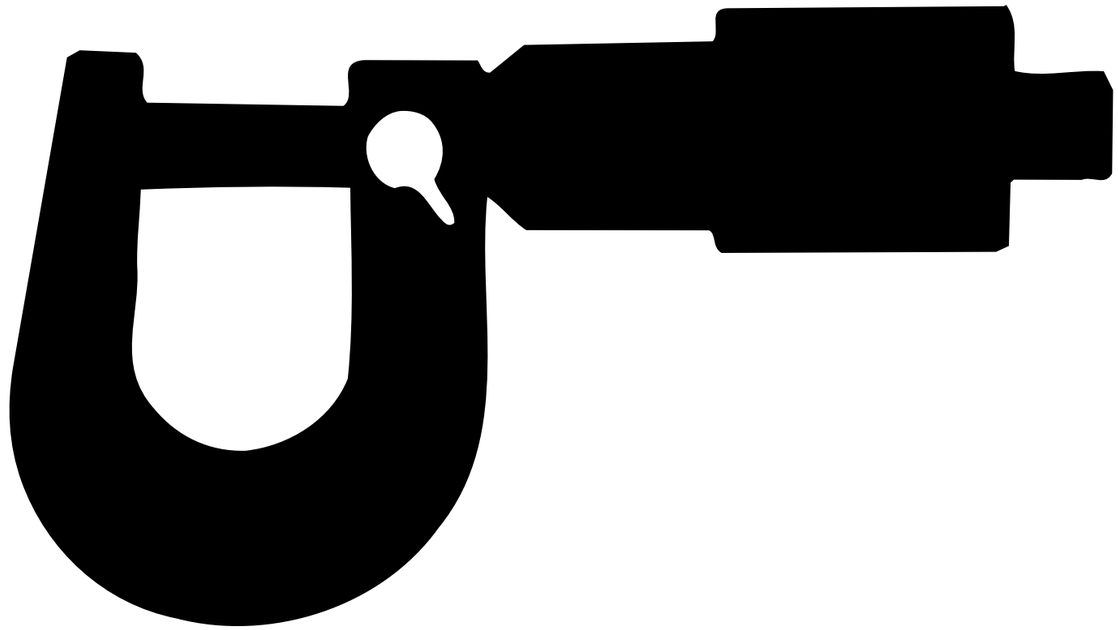
EAS00027
SPECIAL TOOLS

The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools as this will help prevent damage caused by the use of inappropriate tools or improvised techniques. Special tools, part numbers or both may differ depending on the country.
When placing an order, refer to the list provided below to avoid any mistakes.

Tool No.	Tool name/usage	Illustration
90890-01083 90890-01084	Slide hammer bolt (M6) Weight These tools are used to remove or installing the rocker arms shafts.	
90890-01235	Rotor holding tool This tool is used to remove the flywheel magneto.	
90890-01268 90890-01403	Ring nut wrench ① Steering nut wrench ② These tools are used to loosen and tighten the steering ring nuts.	
90890-01294 90890-01326	Damper rod holder T-handle These tools are used for disassembling or assembling the front fork.	
90890-01304	Piston pin puller This tool is used to remove the piston pins.	
90890-01312	Fuel level gauge This tool is used to measure the fuel level in the float chamber.	
90890-01337 90890-01464	Clutch spring holder Clutch spring holder arm These tools are used for removing the nut with holding the compression spring.	

Tool No.	Tool name/usage	Illustration
90890-01367 90890-01368	Fork seal driver weight Frok seal driver attachment These tools are used when installing the fork seal.	
90890-01701	Sheave holder This tool is used to hold the secondary sheave when removing or installing the nut.	
90890-03111	Valve adjusting tool This tool is necessary for adjusting valve clearance.	
90890-03112	Pocket Tester This instrument is invaluable for checking the electrical system.	
90890-03113	Engine tachometer This tool is needed for detecting the engine rpm.	
90890-03141	Timing light This tool is needed for detecting ignition timing.	
90890-04019 90890-04108	Valve spring compressor Attachment These tools are used when removing or installing the valve and the valve spring.	
90890-04116	Valve guide remover This tool is used to remove the valve guide.	

Tool No.	Tool name/usage	Illustration
90890-04117	Valve guide installer This tool is needed to install the valve guide spring.	
90890-04118	Valve guide reamer This tool is used to rebore the valve guide.	
90890-06754	Ignition checker This instrument is necessary for checking the ignition system components.	
90890-85505	Yamaha bond No. 1215 This sealant (bond) is used for crankcase mating surface, etc.	
90890-03081	Compression gauge This gauge is used to measure the engine compression.	



SPEC 2

CHAPTER 2.
SPECIFICATIONS

GENERAL SPECIFICATIONS 2-1

MAINTENANCE SPECIFICATIONS 2-4
ENGINE 2-4
CHASSIS 2-8
ELECTRICAL 2-10

CONVERSION TABLE 2-12

GENERAL TIGHTENING TORQUE SPECIFICATIONS 2-13

TIGHTENING TORQUES 2-14
TIGHTENING TORQUES (ENGINE) 2-14
TIGHTENING TORQUES (CHASSIS) 2-16

LUBRICATION POINTS AND LUBRICANT TYPES 2-17
ENGINE 2-17
CHASSIS 2-18

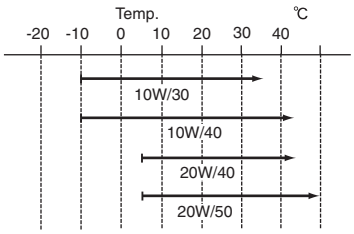
COOLING SYSTEM DIAGRAMS 2-19

LUBRICATION DIAGRAMS 2-21

CABLE ROUTING 2-23

SPECIFICATIONS

GENERAL SPECIFICATIONS

Item	XN125 [XN150]
Dimensions	
Overall length	1.868 mm
Overall width	740 mm
Overall height	1.096 mm
Seat height	777 mm
Wheelbase	1.315 mm
Minimum ground clearance	105 mm
Minimum turning radius	1.800 mm
Weight	
Wet (with oil and a full fuel tank)	123 kg
Dry (without oil and fuel)	116 kg
Engine	
Engine type	Liquid cooled 4-stroke, SOHC
Cylinder arrangement	Forward inclined single cylinder
Displacement	124 cm^3 [152 cm^3]
Bore x stroke	53.7 x 54.8 mm [59.5 x 54.8 mm]
Compression ratio	11: 01
Standard compression pressure (at sea level)	1.400kPa/500r/min (14kgf/cm^2/500r/min)
Starting system type	Electric starter
Lubrication system	Wet sump
Oil capacity	
Engine oil	 API STANDARD: SE or higher grade
Periodic oil change	1.2 L
Total amount	1.4 L
Final gear case oil	
Total amount	0.15 L
Coolant system	
Radiator capacity (including all routes)	1.1 L
Coolant reservoir capacity	0.35 L
<from low to full level>	<0.25 L>
Air filter type	Dry element
Fuel	
Recommended fuel	Regular unleaded gasoline
Fuel tank capacity	10 L

Item	XN125 [XN150]
Carburator	
Type/quantity	TK 5DS/1 [TK 5KD/1]
Manufacturer	TEIKEI
Spark plug	
Type	CR8E
Manufacturer	NGK
Spark plug gap	0.5~0.7 mm
Clutch type	Dry, centrifugal automatic
Transmission	
Primary reduction system	Helical gear
Primary reduction ratio	40/15 (2.666)
Secondary reduction system	Spur gear
Secondary reduction ratio	44/12 (3.666) [42/14 (3)]
Transmission type	V-belt automatic
Operation	Centrifugal automatic type
Chassis	
Frame type	Steel tube backbone
Caster angle	26°
Trail	80 mm
Tyre	
Tyre type	Tubeless
Size (front)	120/70-12
Size (rear)	120/70-12
Manufacturer (front)	METZELER
Manufacturer (rear)	METZELER
Type (front)	7-TEEN
Type (rear)	7-TEEN
Tyre pressure (cold)	
Maximum load*-except motorcycle	187 kg
Loading condition A	
Front	180 kPa (1.80 kgf/cm^2)
Rear	200 kPa (2.00 kgf/cm^2)
Loading condition B	
Front	200 kPa (2.00 kgf/cm^2)
Rear	220 kPa (2.20 kgf/cm^2)
Front wheel	
Wheel type	Cast wheel
Rim size	12 x MT3.50
Rear wheel	
Wheel type	Cast wheel
Rim size	12 x MT3.50

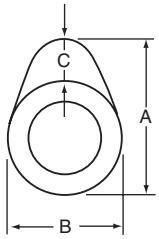
Item	XN125 [XN150]
Brake	
Front brake type	Single disc brake
Front brake operation	Right hand operation
Rear brake type	Drum brake
Rear brake operation	Left hand operation
Suspension	
Front suspension	Telescopic fork
Rear suspension	Unit swing
Shock absorber	
Front fork type	Coil spring/oil damper
Rear shock absorber assembly type	Coil spring/oil damper
Wheel travel	
Front wheel travel	90 mm
Rear wheel travel	80 mm
Electrical	
Ignition system type	C.D.I
Charging system type	Flywheel magneto
Battery type	CB7L-B2 or YB7L-B2
Battery voltage/capacity	12V 8Ah
Headlight type	Bulb
Bulbs (voltage/wattage x quantity)	
Headlight	12V 35W/35W x 2
Position light	12V 5W x 1
Brake/tail light	12V 21W/5W x 1
Front flasher light	12V 21W x 2
Rear flasher light	12V 10W x 2
Meter light	12V 1.2W x 2
High beam indicator light	12V 1.2W x 1
Turn indicator light	12V 1.2W x 2
Coolant temperature warning light	12V 1.2W x 1
Amperage for fuses	
Main fuse	20 A
Radiator fan fuse	7.5 A

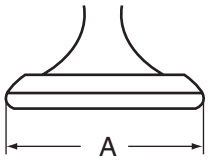
MAINTENANCE SPECIFICATIONS

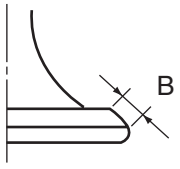
ENGINE

*[XN150]

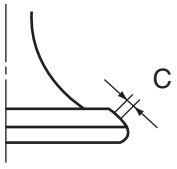
Item		Standard	Limit
Cylinder head			
Warp limit		•••	0.03 mm
Cylinder			
Bore size		53.700 ~ 53.705 mm [59.500 ~ 59.505mm]*	•••
Out of round limit		•••	0.05 mm
Camshaft			
Drive system		Chain drive (left)	•••
Cam dimensions			
Intake	"A"	30.811 ~ 30.911 mm	30.711 mm
	"B"	25.145 ~ 25.245 mm	25.045 mm
	"C"	5.666 m	•••
Exhaust	"A"	30.811 ~ 30.911 mm	30.711 mm
	"B"	25.152 ~ 25.252 mm	25.052 mm
	"C"	5.659 m	•••
Camshaft runout limit		•••	0.03 mm
Cam chain			
Cam chain type/No. of links		82 RH2005/94	•••
Rocker arm/rocker armshaft			
Rocker arm inside diameter		12.000 ~ 12.018 mm	12.030mm
Rocker shaft outside diameter		11.981 ~ 11.991 mm	11.950 mm
Valve,valve seat, valve guide			
Valve clearance (cold)	IN	0.10 ~ 0.14 mm	•••
	EX	0.16 ~ 0.20 mm	•••
Valve dimensions			
"A" head diameter	IN	26.9 ~ 27.1 mm	•••
	EX	22.9 ~ 23.1 mm	•••
"B" face width	IN	2.687 ~ 3.252 mm	•••
	EX	2.687 ~ 3.252 mm	•••
"C" seat width	IN	0.9 ~ 1.1 mm	•••
	EX	0.9 ~ 1.1 mm	1.6 mm
Stem outside diameter	IN	4.475 ~ 4.490 mm	4.445 mm
	EX	4.460 ~ 4.475 mm	4.430 mm
Guide inside diameter	IN	4.500 ~ 4.512 mm	4.542 mm
	EX	4.500 ~ 4.512 mm	4.542 mm
Stem-to-guide clearence	IN	0.01 ~ 0.037 mm	0.08 mm
	EX	0.025 ~ 0.052	0.10 mm
Stem runout limit		•••	0.01 mm
Valve seat width	IN	0.9 ~ 1.1 mm	1.6 mm
	EX	0.9 ~ 1.1 mm	1.6 mm





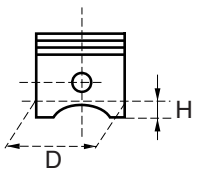
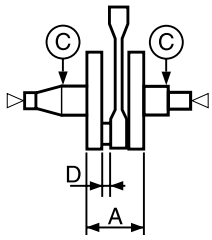


Face width



Seat width

*[XN150]

Item		Standard	Limit
Valve spring			
Inner spring			
Free length	IN/EX	41.94 mm	39.84 mm
Set length (valve closed)	IN/EX	37.5 mm	•••
Compressed pressure	IN/EX	45.1 ~ 50.9 N	•••
Tilt limit	IN/EX	2.5° / 1.9 mm	•••
Piston			
Piston to cylinder clearance		0.025 ~ 0.035 mm	0.15 mm
Piston size “D”		53.670 ~ 53.687 mm [59.470 ~ 59.487 mm]*	•••
Measuring point “H”		4.5 mm	•••
Piston pin bore inside diameter		15.002 ~ 15.013 mm	15.045 mm
Piston pin outside diameter		14.991 ~ 15.000 mm	14.975 mm
Piston rings			
Top ring:			
Type		Barrel	•••
End gap (installed)		0.15 ~ 0.25 mm	0.50 mm
Side clearance (installed)		0.03 ~ 0.07 mm	0.12 mm
2 nd ring:			
Type		Taper	•••
End gap (installed)		0.15 ~ 0.30 mm	0.65 mm
Side clearance (installed)		0.02 ~ 0.06 mm	0.12 mm
Oil ring:			
End gap (installed)		0.2 ~ 0.7 mm	•••
Crankshaft			
Crank width “A”		47.950 ~ 48.000 mm	•••
Runout limit “C”		•••	0.03 mm
Big end side clearance “D”		0.15 ~ 0.45 mm	•••
Automatic centrifugal clutch			
Clutch shoe thickness		2.0 mm	1.0 mm
Clutch housing inside diameter		120 mm [135 mm]*	120.5[135.5]*
Weight outside diameter		20.0 mm	19.5 mm
Clutch-in revolution		3,550 ~ 4,050 rpm [3,250 ~ 3,750 rpm]*	•••
Clutch-stall revolution		5,900 ~ 6,900 rpm [5,600 ~ 6,400 rpm]*	•••
V-Belt			
V-belt width		22 mm	19 mm

*[XN150]

Item	Standard	Limit
Carburetor		
Type	TK 5DS [TK 5KD]*	
I.D mark	•••	•••
Main jet (M.J)	#116 [#114]*	•••
Main air jet (M.A.J)	ø1.0 [ø1.4]*	•••
Jet needle (J.N)	4E31 (3/5) [4E32 (3/5)]*	•••
Pilot air jet (P.A.J.1)	ø1.30	•••
Needle jet (N.J)	2.590	•••
Pilot jet (P.J)	#38 [#36]	•••
Pilot screw (P.S)	2 1/4 ~ 2 3/4 [2 ~ 4]*	•••
Valve seat size (V.S)	ø2.00	•••
Starter jet 1 (G.S.1)	#0.45	•••
Float height (F.L)	5 ~ 6 mm	•••
Engine idle speed	1.600 ~ 1.800 rpm	•••
Oil pump		
Type	Trochoid	•••
Tip clearence	•••	0.15 mm
Side clearance	•••	0.15 mm
Housing and rotor clearence	•••	0.17 mm
Radiator		
Type	Cooling fin with electric fan	•••
Width/height thickness	170 / 282 / 29 mm	•••
Radiator cap opening pressure	90 ~ 110 kPa	•••
Reservoir tank capacity	0.35 L	•••
Thermostatic valve		
Manufacturer	ANGLI	•••
Valve opening temperature	82 ±3°C	•••
Valve full open temperature	95 ±3°C	•••

Item	Size
Crankshaft oil seal (left)	22 x 32 x 7
Crankshaft oil seal (right)	19 x 30 x 8 (Reinforced)
Crankshaft oil seal (right)	19 x 30 x 8 (Double lips)
Camshaft bearing (left)	20 x 42 x 12
Camshaft bearing (right)	15 x 32 x 9
Starter clutch bearing	17 x 35 x 10
Primary drive gear bearing (left)	25 x 52 x 15
Primary drive gear bearing (right)	17 x 40 x 12
Primary drive gear oil seal	25 x 42 x 6 (Double lips)
Main axle bearing (left)	15 x 25 x 12 (Needle bearing)
Main axle bearing (right)	12 x 37 x 12
Drive axle bearing (left)	17 x 47 x 14 (Sphere)
Drive axle bearing (right)	22 x 50 x 14 (Sphere)
Drive axle oil seal	32 x 52 x 7

MAINTENANCE SPECIFICATIONS

CHASSIS

Item		Standard	Limit
Steering system			
Steering bearing type		Ball bearing	•••
No./size of steel balls	Upper	15 pcs 4.75 mm	•••
	Lower	15 pcs 4.75 mm	•••
Front suspension			
Front fork travel		90 mm	•••
Spring rate	(K1)	11 N/mm	•••
Stroke	(K1)	0 ~ 90 mm	•••
Oil capacity		125 cm^3	•••
Oil grade		SAE20	•••
Inner tube outer diameter		33 mm	•••
Optional spring		No	•••
Rear suspension			
Shock absorber travel		80 mm	•••
Fitting length		229 mm	•••
Spring rate	(K1)	18 N/mm	•••
	(K2)	53.5 N/mm	•••
Stroke	(K1)	0 ~ 60 mm	•••
	(K2)	60 ~ 80 mm	•••
Front wheel			
Type		Cast wheel	•••
Rim size		MT 3.50 x 12	•••
Rim material		Aluminium	•••
Rim runout limit	Radial	•••	1 mm
	Lateral	•••	0.5 mm
Rear wheel			
Type		Cast wheel	•••
Rim size		MT 3.50 x 12	•••
Rim material		Aluminium	•••
Rim runout limit	Radial	•••	1 mm
	Lateral	•••	0.5 mm
Front disc brake			
Type		Single	•••
Disc outside diameter x thickness		220 x 4.5 mm	•••
Pad thickness		4 mm	0.8 mm
Master cylinder inside diameter		11 mm	•••
Caliper cylinder outside diameter		32 mm	•••
Brake fluid type		DOT #3 or DOT #4	•••
Rear drum brake			
Type		Leading, trailing	•••
Drum inside diameter		130 mm	130.5 mm
Shoe thickness		4.0 mm	2.0 mm
Shoe spring free length		54 mm	•••

Item	Standard	Limit
Brake lever		
Brake lever free play (front)	10 ~ 20 mm	•••
Brake lever free play (rear)	10 ~ 20 mm	•••
Throttle cable free play	1.5 ~ 3.0 mm	•••

MAINTENANCE SPECIFICATIONS

ELECTRICAL

Item	Standard	Limit
Ignition timing		
Ignition timing (B.T.D.C)	10° at 1.700 rpm	•••
Advanced timing (B.T.D.C)	32° at 5.000 rpm	•••
Advanced type	Digital	•••
T.C.I		
Pickup coil resistance/color	248 ~ 372 Ω at 20°C / white / red-white / blue	•••
Source coil resistance/color	720 ~ 1080 Ω at 20°C / green/white – brown/black	•••
Ignition coil		
Minimum spark gap	6 mm	•••
Primary winding resistance	0.32 ~ 0.48 Ω at 20°C	•••
Secondary winding resistance	5.7 ~ 8.5 kΩ at 20°C	•••
Spark plug cap		
Type	Resin type	•••
Resistance	10 kΩ	•••
Charging system		
Type	Flywheel magneto	•••
Normal output	14 V 10.5 A at 5.000 rpm	•••
Stator coil resistance/color	0.6 ~ 0.9 Ω at 20°C/white – white – white	
Rectifier/regulator		
Model/manufacturer		
No load regulated voltage	14.5 V	•••
Capacity	25 A	•••
Withstand voltage	200 V	•••
Battery		
Specific gravity	1.280	•••
Electric starting system		
Type	Constant mesh type	•••
Starter motor:		
Operation voltage	12 V	•••
Output	0.3 kW	•••
Armature coil resistance	0.0306 ~ 0.0374 Ω at 20°C	•••
Brush overall length	10 mm	3.5 mm
Brush quantity	2	•••
Spring force	5.6 ~ 8.3 N	•••
Commutator diameter	22 mm	21 mm
Mica undercut (depth)	1.5 mm	•••
Starter relay		
Model/manufacturer	9768054/JIDECO	•••
Amperage rating	100 A	•••
Coil winding resistance	4.2 ~ 4.6 Ω at 20°C	•••

Item	Standard	Limit
Horn		
Model/manufacturer	YF-12 / NIKKO	•••
Maximum amperage	3 A	•••
Flasher relay		
Flasher frequency	80 ~ 160 cycle/min	•••
Fuel gauge		
Model/manufacturer	25.33.06/MAXIMA	•••
Sender unit resistance – full	4 ~ 10 Ω	•••
– empty	90 ~ 100 Ω	•••
Circuit breaker		
Main	20 A x 1 pcs	•••
Radiagtor fan fuse	7.5 A x 1 pcs	•••

AS00028
CONVERSION TABLE

All specification data in this manual are listed in SI and METRIC UNITS.
Use this table to convert METRIC unit data to IMPERIAL unit data.
Ex.

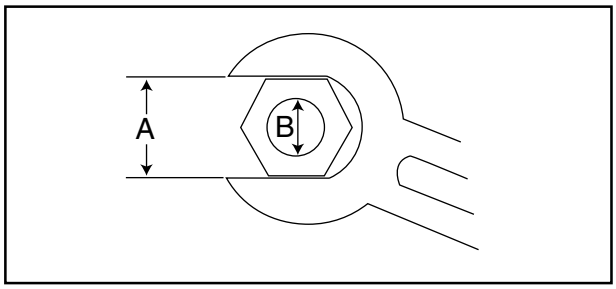
METRIC		MULTIPLIER		IMPERERIAL
** mm	x	0.03937	=	** in
2 mm	x	0.03937	=	0.08 in

CONVERSION TABLE

METRIC TO IMPERIAL			
	Metric unit	Multiplier	Imperial unit
Torque	m•kg m•kg cm•kg cm•kg	7.233 86.794 0.0723 0.8679	ft•lb in•lb ft•lb in•lb
Weight	kg g	2.205 0.03527	lb oz
Speed	km/h	0.6214	mph
Distance	km m m cm mm	0.6214 3.281 1.094 0.3937 0.03937	mi ft yd in in
Volume/ Capacity	cc (cm^3) cc (cm^3) L (liter) L (liter)	0.03527 0.06102 0.8799 0.2199	oz(IMP liq.) cu•in qt(IMP liq.) gal(IMP liq.)
Misc.	kg/mm kg/cm^2 Centigrade (°C)	55.997 14.2234 9/5+32	lb/in psi(lb/in^2) Fahrenheit (°F)

EAS00029
GENERAL TIGHTENING TORQUE SPECIFICATIONS

This chart specifies tightening torques for standard fasteners with a standard ISO thread pitch. Tightening torque specifications for special components or assemblies are provided for each chapter of this manual. To avoid warpage, tighten multi-fastener assemblies in a crisscross pattern and progressive stages until the specified tightening torque is reached. Unless otherwise specified, tightening torque specifications require clean, dry threads. Components should be at room temperature.



A: Width across flats
B: Thread diameter

A (nut)	B (bolt)	General tightening torques	
		Nm	m•kg
10 mm	6 mm	6	0.6
12 mm	8 mm	15	1.5
14 mm	10 mm	30	3.0
17 mm	12 mm	55	5.5
19 mm	14 mm	85	8.5
22 mm	16 mm	130	13.0

TIGHTENING TORQUES

ENGINE

Item	Fastener	Thread size	Q'ty	Tightening torque		Remarks
				Nm	m•kg	
Oil check bolt	Bolt	M6	1	9	0.9	
Spark plug	-	M10	1	13	1.3	
Cylinder, water drain bolt	Bolt	M6	1	8	0.8	
Cylinder head and cylinder	Nut	M8	4	22	2.2	
Cylinder head and cylinder	Bolt	M6	2	12	1.2	
Cylinder and crankcase	Bolt	M6	1	12	1.2	
Camshaft bearing stopper	Bolt	M6	1	12	1.2	
Camchain guide	Bolt	M6	1	6.5	0.65	
Valve adjuster nut	Nut	M5	2	6.5	0.65	
Camshaft pinion bolt	Bolt	M8	1	30	0.3	
Camshaft tensionner	Bolt	M6	2	10	1.0	
Rocker shaft securing plate	Bolt	M6	1	10	1.0	
Thermostatic valve cover	Bolt	M6	1	9	0.9	
Water pump housing cover	Bolt	M6	4	10	1.0	
Water pump housing	Bolt	M6	2	7	0.7	
Water pump housing	Bolt	M6	1	7	0.7	
Thermostatic valve cover	Bolt	M6	2	9	0.9	
Oil pump	Bolt	M6	3	65	6.5	
Engine drain plug		M35	1	32	3.2	
Inlet manifold on cylinder head	Bolt	M6	2	10	1.0	
Air filter cover	Bolt	M6	8	6.5	0.65	
Exhaust pipe stud bolt on cylinder	Nut	M6	2	11	1.1	
Muffler on bracket	Bolt	M8	2	27	2.7	
Muffler bracket on crankcase	Bolt	M8	2	27	2.7	
Muffler protector	Bolt	M6	2	4.5	0.45	
Crankcase (left)	Bolt	M6	8	9	0.9	
Cover, crankcase 1	Bolt	M6	11	10	1.0	
Cover, crankcase 2	Bolt	M6	6	10	1.0	
Cover, oil pump	Bolt	M6	3	6.5	0.65	
Duct, air	Bolt	M6	3	7	0.7	
Cover, magneto	Bolt	M6	3	7	0.7	
Cylinder head stud bolt	Stud	M8	4	13	1.3	
Transmission oil drain plug	Plug	M8	1	22	2.2	
Engine oil drain plug	Plug	M8	1	22	2.2	
Cover, crankcase 3	Bolt	M6	2	6.5	0.65	
Starter idle gear plate	Bolt	M6	2	7	0.7	
Primary fixed sheave	Nut	M14	1	60	6.0	
Clutch carrier assembly	Nut	M36	1	90	9.0	
Clutch housing	Nut	M12	1	55	5.5	

Item	Fastener	Thread size	Q'ty	Tightening torque		Remarks
				Nm	m•kg	
Rear brake shoes pin pivot	Nut	M10	1	120	12.0	
Thermo unit	-	Pt 1/8	1	75	7.5	
Coolant drain bolt on cylinder	Bolt	M6	1	8	0.8	
Starter motor	Bolt	M6	2	65	6.5	
Rotor	Nut	M12	1	70	7.0	
		M16	1	225	22.5	
		M16	1	225	22.5	
Stator	Bolt	M6	3	70	7.0	

TIGHTENING TORQUES

CHASSIS

Item	Fastener	Thread size	Q'ty	Tightening torque		Remarks
				Nm	m•kg	
Frame with engine bracket	Bolt	M10	1	42	4.2	
Engine bracket 2 with 3	Bolt	M10	2	55	5.5	
E/G bracket with E/G (with main stand)	Bolt	M10	2	32	3.2	
Reinforcement tail	Bolt	M6	4	6.5	0.65	
Rear cushion with frame	Nut	M10	1	32	3.2	
Rear cushion with engine	Nut	M8	1	18	1.8	See chapter 7 "STEERING HEAD"
Steering shaft	Nut	M25	3			
Handle with steering shaft	Nut	M10	1	60	6.0	
Master cylinder with handle	Bolt	M6	2	8.5	0.85	
Seat lock	Bolt	M6	2	4	0.4	
Box with frame	Bolt	M6	2	8	0.8	
Box with reinforcement tail	Bolt	M6	2	8	0.8	
Carrier with frame	Bolt	M8	1	19	1.9	
Carrier with reinforcement tail	Bolt	M8	2	19	1.9	
Footrest board with frame	Bolt	M6	4	4	0.4	
Mud guard with frame	Bolt	M6	2	7	0.7	
Fender on front fork	Bolt	M6	3	4	0.4	
Cover handle with handle	Bolt	M5	2	4.5	0.45	
Mainstand	Nut	M10	2	42	4.2	
Rear footrest	Nut	M8	2	14	1.4	
Front wheel axle	Nut	M12	1	70	7.0	
Rear wheel axle	Nut	M14	1	104	10.4	
Rear brake cam lever	Nut	M6	1	14	1.4	
Rear brake pin pivot	Nut	M10	1	12	1.2	
Front caliper on front fork	Bolt	M8	2	23	2.3	
Front brake disc on wheel	Bolt	M8	4	23	2.3	
Union bolt with caliper	Bolt	M10	1	23	2.3	
Union bolt with master cylinder	Bolt	M10	1	23	2.3	

EAS00031
LUBRICATION POINTS AND LUBRICANT TYPES
ENGINE

Lubrication Point	Symbol
Oil seal lips	LS
O-ring (Except V-belt drive unit)	LS
Cylinder head tightening nut mounting surface	E
Crankshaft pin outside	E
Connecting rod big end thrust surface	E
Rotary filter inner surface	E
Drive gear inner surface	E
Cam chain outside sprocket inner surface	E
Piston pin	E
Piston outside and ring groove	E
Camshaft cam profile	M
Valve stem (IN, EX)	M
Valve stem end (IN, EX)	M
Rocker shaft	E
Valve rocker arm inner surface	M
Shaft	E
Shaft (Oil pump assembly)	E
Gasket (Oil pump assembly)	LS
Holder	LS
Idle gear 1 thrust surfaces	E
Shaft 1	E
Idle gear 2 thrust surfaces	E
Idle gear 2 inner surface	E
Main axle thrust surfaces	E
Crankcase mating surfaces	Yamaha bond No. 1215
Crankcase breather plug	LT
Stator grommet	Yamaha bond No. 1215
Suction pipe	LT

LUBRICATION POINTS AND LUBRICANT TYPES

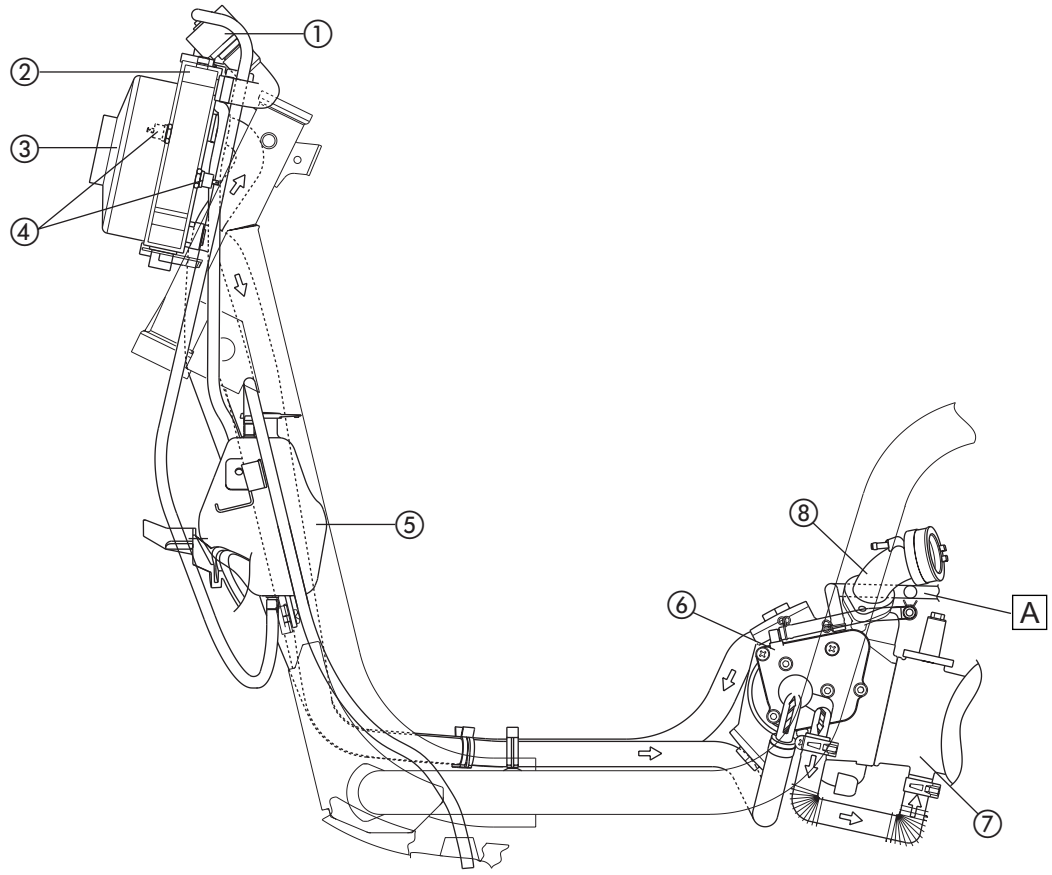
EAS00032
CHASSIS

Lubrication Point	Symbol
Front wheel oil seal lips (left/right)	LS
Steering head pipe bearing (upper/lower)	LS
Tube guide (throttle grip) inner surface	LS
Brake cable (brake lever)	LS
Brake lever and lever holder bolt sliding surface	LS
Sidestand sliding surface	LS
Centerstand sliding surface and mounting bolt	LS
Centerstand stopper pivot shaft	LS
Brake cam pivot shaft and cam surface	LS

EAS00033
COOLING SYSTEM DIAGRAMS

① Radiator cap
② Radiator
③ Radiator fan
④ Thermo switch
⑤ Coolant tank
⑥ Water pump
⑦ Cylinder
⑧ Inlet manifold

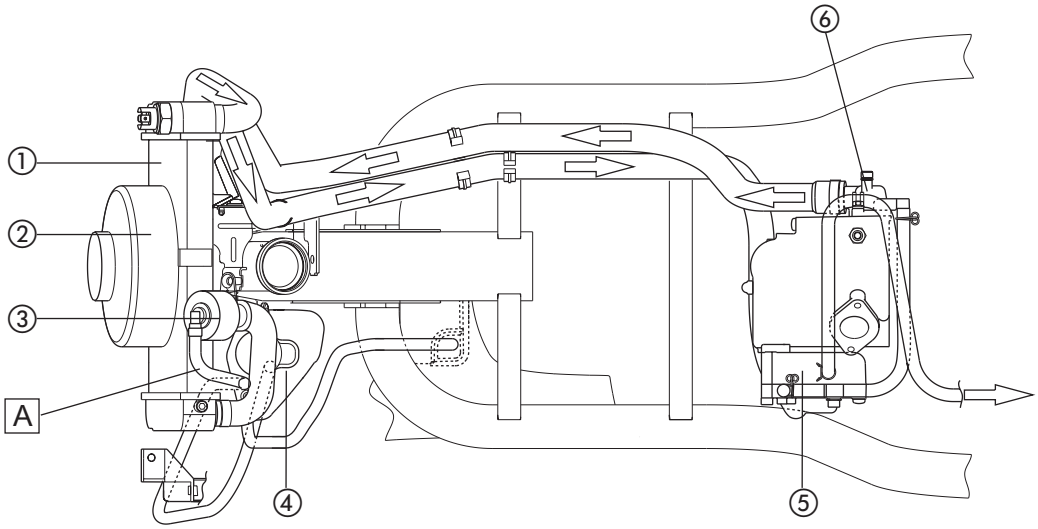
A Pass the hose under inlet manifold.



EAS00033(bis)
# COOLING SYSTEM DIAGRAMS

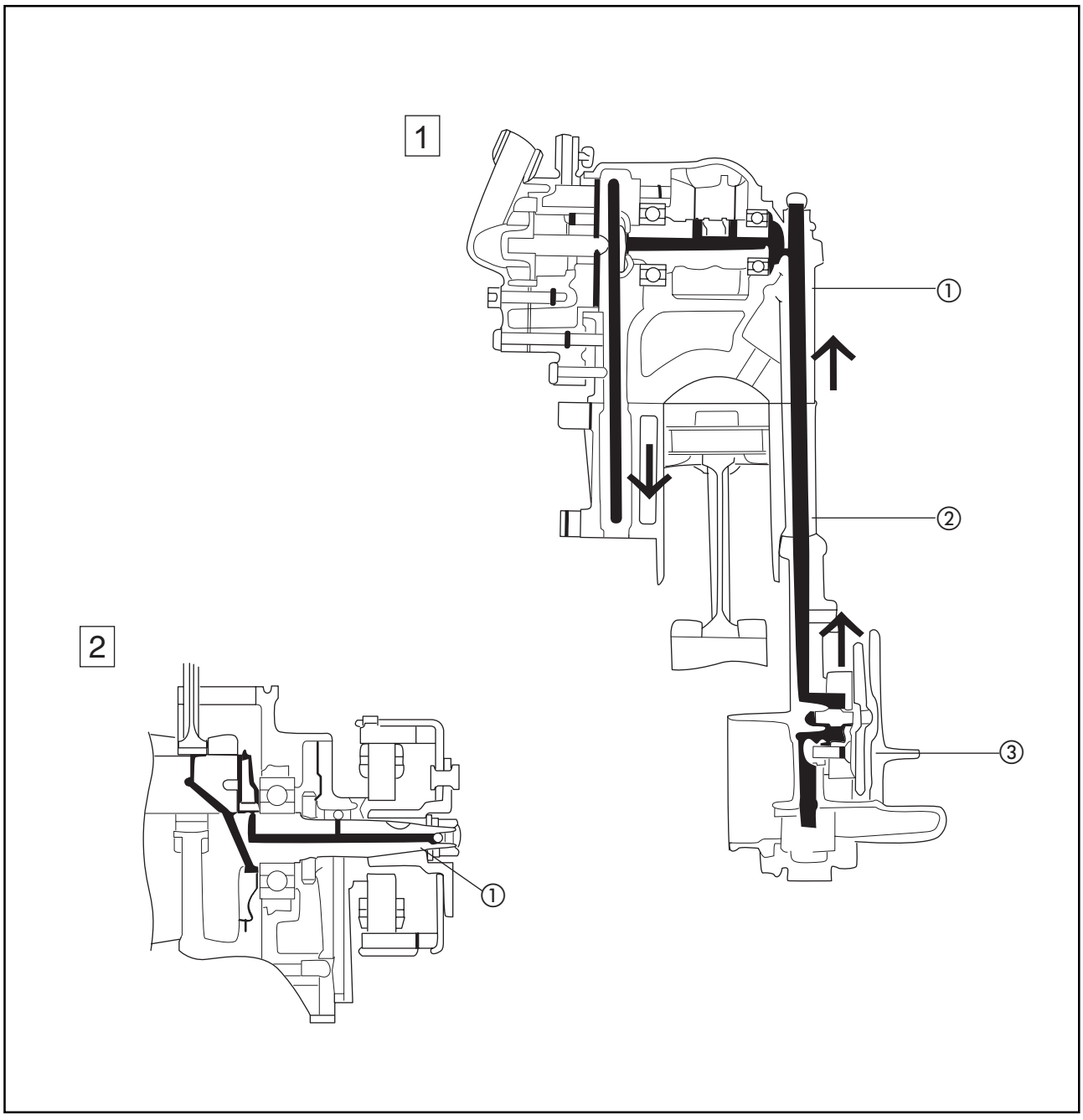
① Radiator
② Radiator fan
③ Radiator cap
④ Coolant tank
⑤ Water pump
⑥ Thermostat

[A] Pass the hose between radiator and radiator filler hose.



EAS00034
LUBRICATION DIAGRAMS

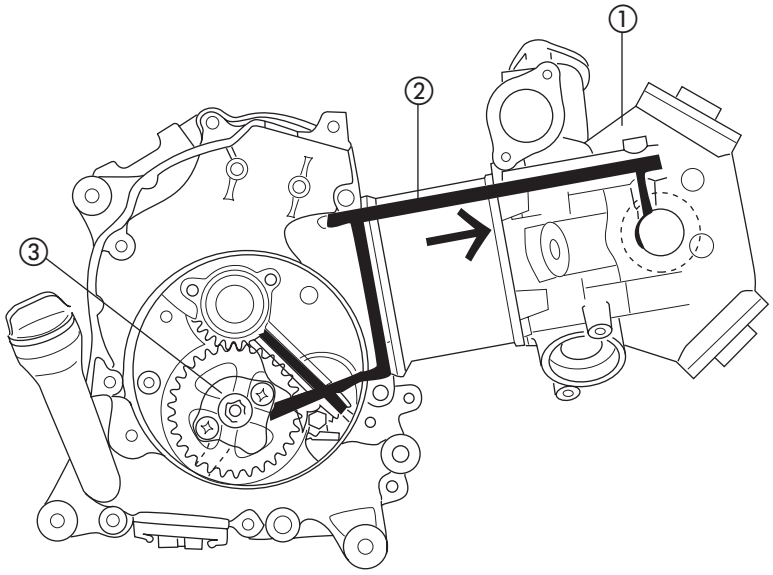
1 Lubrication of the cylinder head
① Cylinder head
② Cylinder
③ Crankcase
2 Lubrication of the crankshaft
① Crankshaft



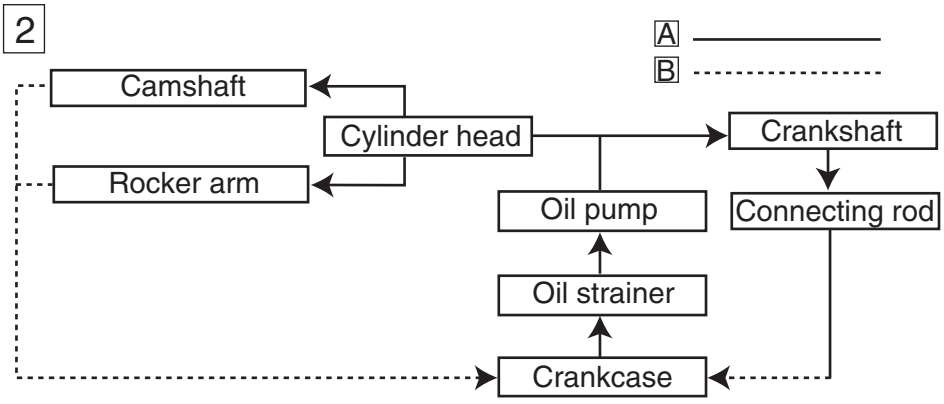
EAS00034(bis)
# LUBRICATION DIAGRAMS

1 Oil flow
① Cylinder head
② Cylinder
③ Oil pump
2 Lubrication table
A Oil pressure flow
B Oil return flow

1



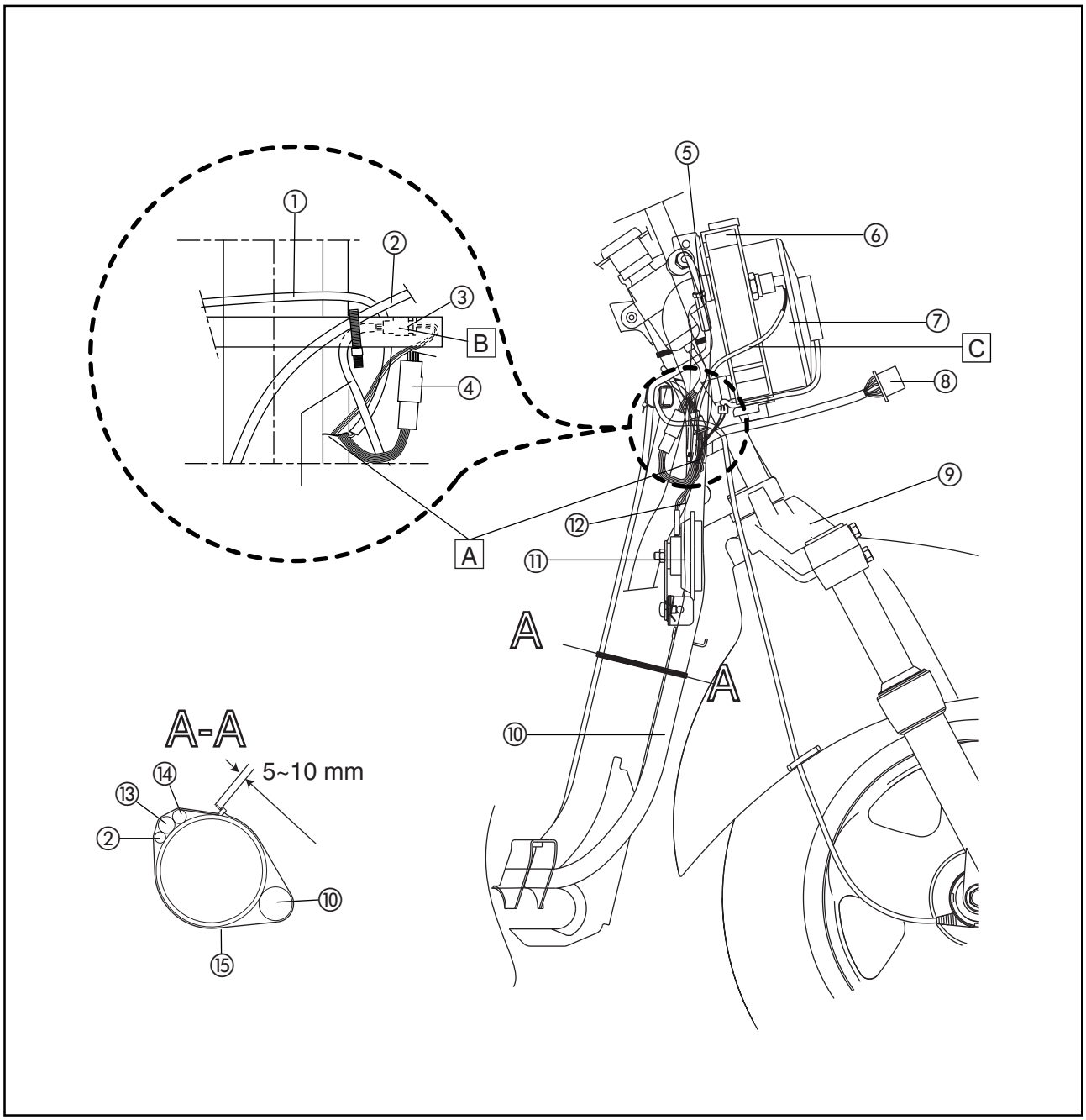
2



EAS00035
CABLE ROUTING

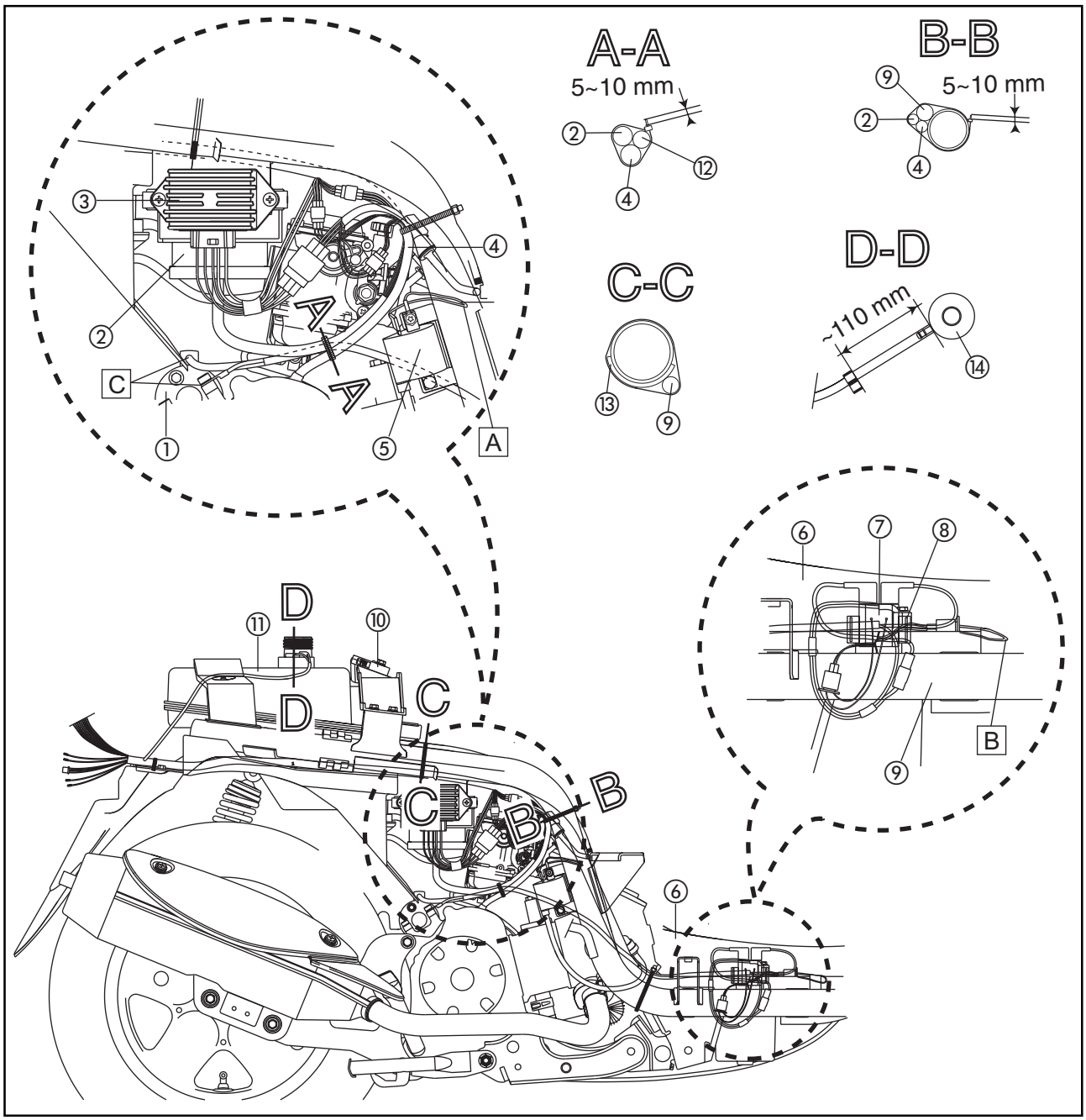
① Thermo switch wire
② Seat lock cable
③ Speedometer wire
④ Main switch wire
⑤ Seat lock cable adjuster
⑥ Radiator
⑦ Fan
⑧ Headlight and front flasher connector
⑨ Front fork assembly
⑩ Wire harness
⑪ Horn
⑫ Horn wire
⑬ Rear brake cable
⑭ Throttle cable
⑮ Band switch

A Make the wire harness getting out here.
B Place the speedometer wire as shown.
C Pass the thermo switch lead between the hoses.

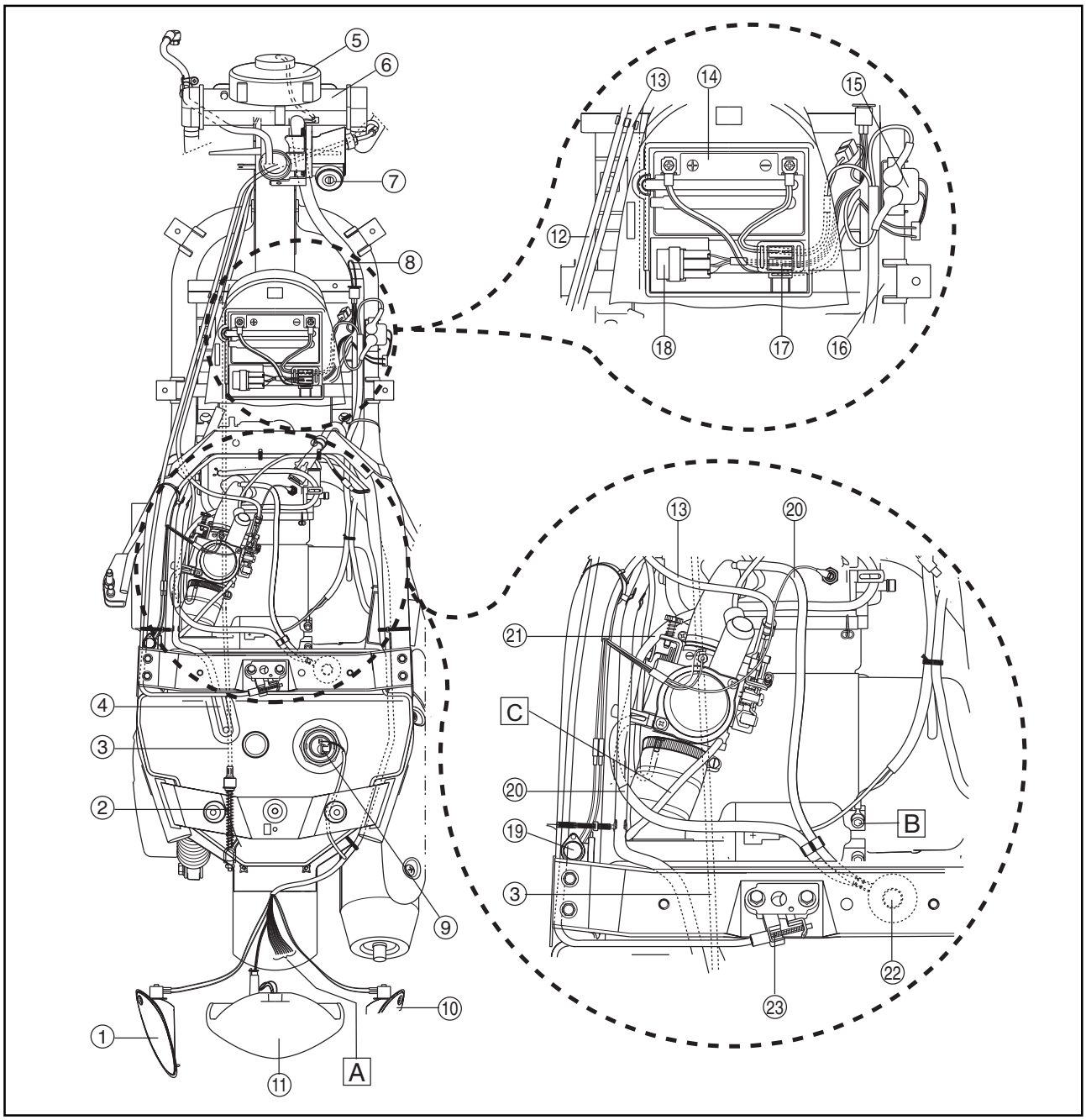


① Starter motor
② CDI unit
③ rectifier/Regulator
④ CDI magneto wire
⑤ Ignition coil assembly
⑥ Footrest board
⑦ Starter relay
⑧ Battery ground
⑨ Wire harness
⑩ Seat lock assembly
⑪ Fuel tank
⑫ Wire lead
⑬ Mud guard
⑭ Fuel cock

[A] Place the wire as shown.
[B] Place the sidestand wire as shown (option).
[C] Apply grease on stater motor connector/ terminal.

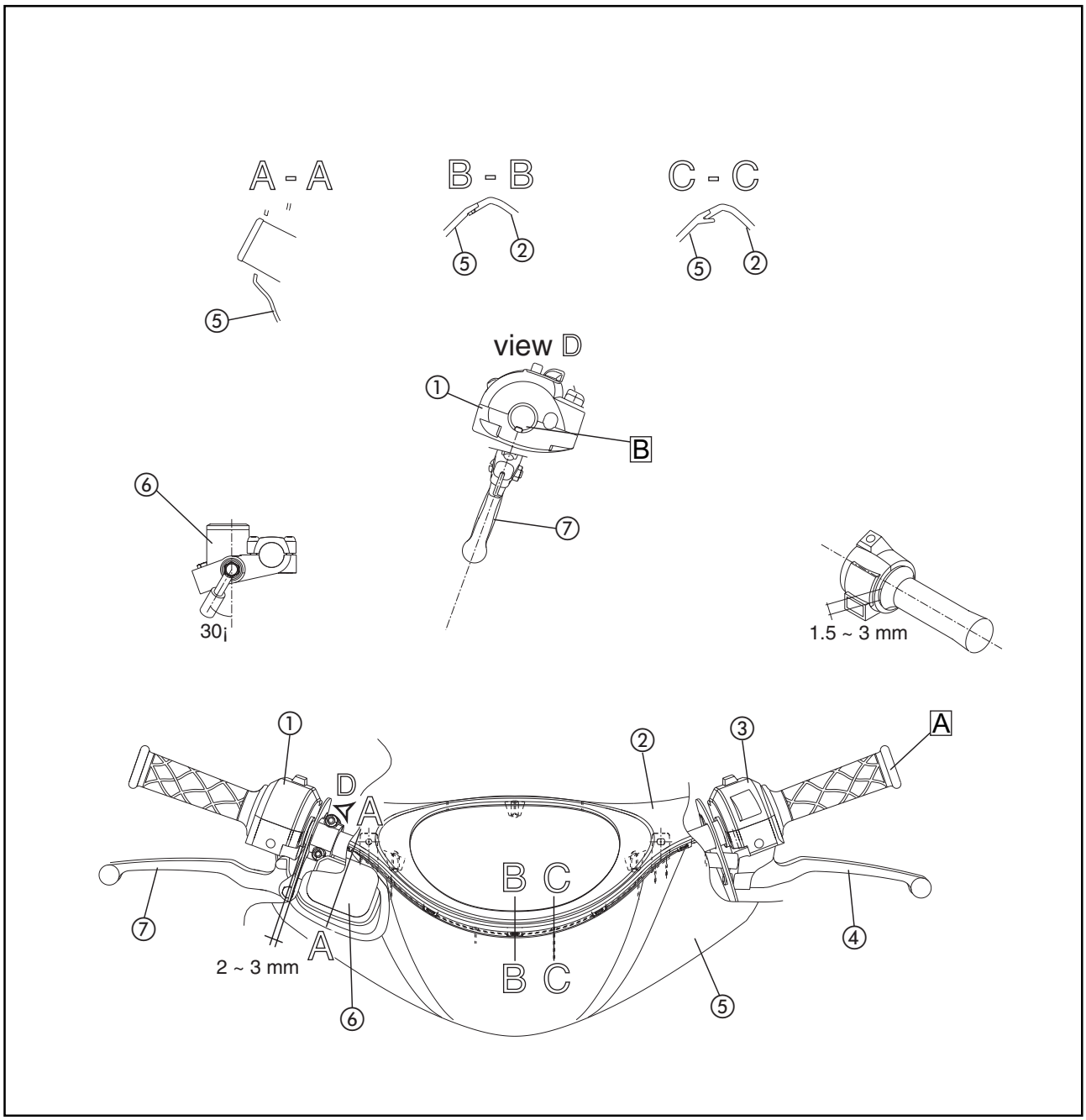


① Rear left flasher
② Rear brake cable adjuster
③ Rear brake cable
④ Fuel overflowed pipe
⑤ Fan
⑥ Radiator
⑦ Main switch
⑧ Sidestand wire (option)
⑨ Fueal gauge wire
⑩ Rear right flasher
⑪ Taillight
⑫ Seat lock cable
⑬ Throttle cable
⑭ Battery
⑮ Starter relay
⑯ Frame
⑰ Fuses box
⑱ Relay
⑲ Sender
⑳ Fuel pipe
㉑ Engine air breather
㉒ Fuel cock
㉓ Seat lock assembly
A Connection for anti-thelf (option)
B Place the Starter motor ground as shown.
C Pass the carburetor breather hose between air duct and air filter case.



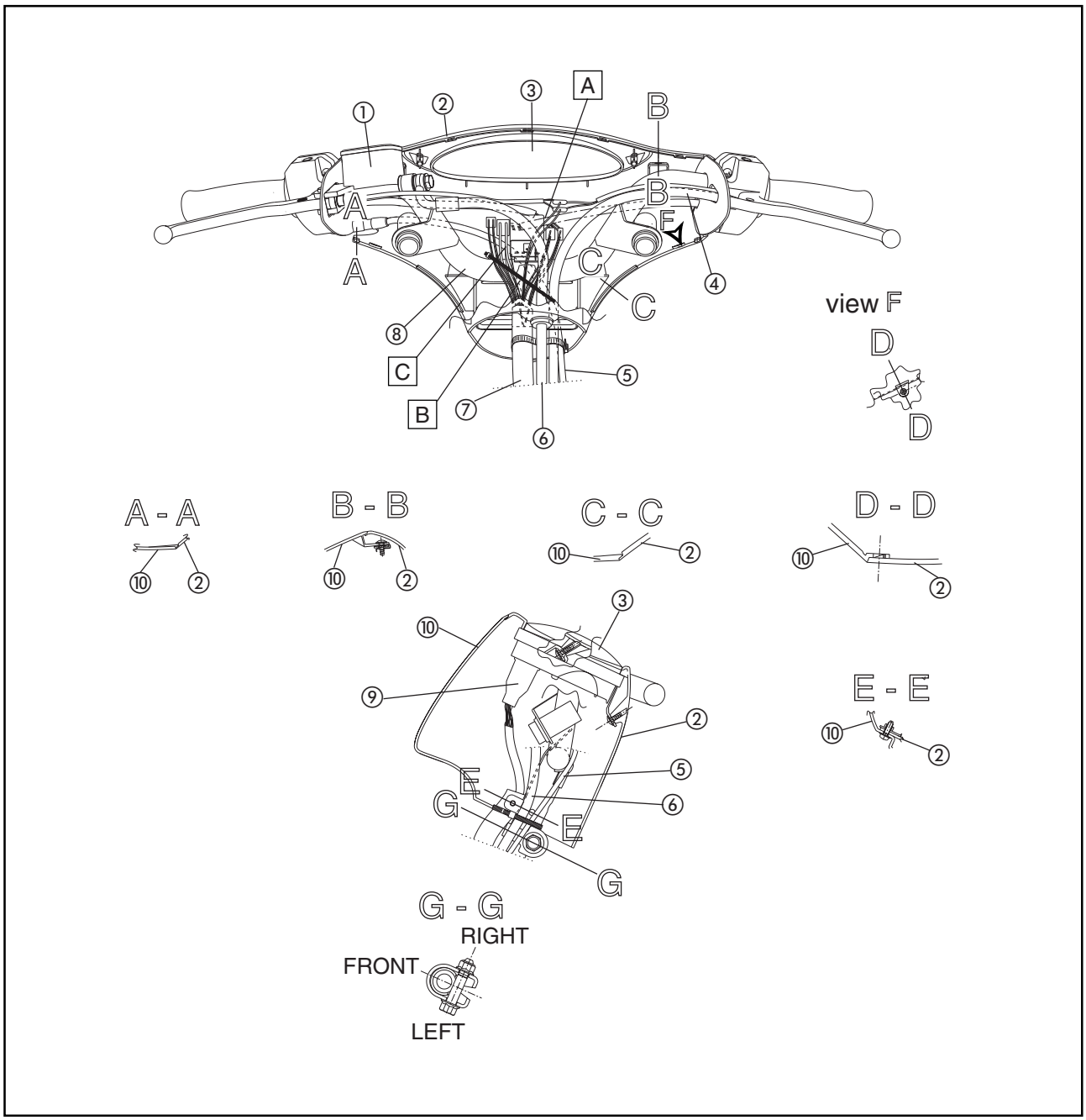
① Right handlebar switches
② Inner handlebar cover
③ Left handlebar switches
④ Rear brake lever
⑤ Front handlebar cover
⑥ Master cylinder
⑦ Front brake lever

A Glue the handlebar grip.
B Install the handlebar switch as shown.



① Master cylinder
② Inner handlebar cover
③ Speedometer assembly
④ Rear brake cable
⑤ Throttle cable
⑥ Front brake hose
⑦ Wire harness
⑧ Handlebar
⑨ Speedometer coupler
⑩ Front handlebar cover

A Pass wires behind the turn signal relay bracket
B Clip all wires and cables all together
C Install the wire harness behind the turn signal relay bracket.



CHK ADJ

3

CHAPTER 3.
PERIODIC CHECKS AND ADJUSTMENTS

INTRODUCTION 3-1

PERIODIC MAINTENANCE AND LUBRICATION INTERVALS 3-1

COVER AND PANEL 3-3
SIDE COVERS AND SEAT 3-3
FRONT COVER, INNER PANEL AND INNER FRONT COVER 3-5
FOOTREST BOARD AND UNDER COVER 3-6
HANDLEBAR COVERS 3-7

ENGINE 3-8
ADJUSTING THE VALVE CLEARANCE 3-8
ADJUSTING THE ENGINE IDLING SPEED 3-9
ADJUSTING THE THROTTLE CABLE FREE PLAY 3-10
CHECKING THE SPARK PLUG 3-11
CHECKING THE IGNITION TIMING 3-12
TRANSMISSION OIL REPLACEMENT 3-13
MEASURING THE COMPRESSION PRESSURE 3-14
CHECKING THE ENGINE OIL LEVEL 3-15
CHANGING THE ENGINE OIL 3-16
MEASURING THE ENGINE OIL PRESSURE 3-17
CLEANING THE AIR FILTER ELEMENT 3-18
CLEANING THE V-BELT CASE AIR FILTER ELEMENT 3-18
CHECKING THE FUEL AND VACUUM HOSES 3-19
EXHAUST SYSTEM INSPECTION 3-19
CHECKING THE COOLANT LEVEL 3-20
CHANGING THE COOLANT 3-21
INSPECTING THE COOLANT SYSTEM 3-24

CHASSIS 3-25
CHECKING THE FRONT BRAKE LEVER FREE PLAY 3-25
ADJUSTING THE REAR BRAKE 3-25
CHECKING THE BRAKE FLUID LEVEL 3-26
CHECKING THE BRAKE PADS 3-27
CHECKING THE BRAKE SHOES 3-27
CHECKING THE BRAKE HOSES 3-27
BLEEDING THE HYDRAULIC BRAKE SYSTEM 3-28
CHECKING AND ADJUSTING THE STEERING HEAD 3-29
CHECKING THE FRONT FORK 3-31
INSPECTING THE REAR SHOCK ABSORBER 3-32
CHECKING THE TYRES 3-32
CHECKING THE WHEELS 3-35
CHECKING AND LUBRICATING THE CABLES 3-35
LUBRICATING THE LEVERS AND PEDALS 3-36
LUBRICATING THE CENTERSTAND 3-36

ELECTRICAL SYSTEM 3-37
CHECKING THE BATTERY 3-37
CHECKING THE FUSES 3-40
REPLACING THE HEADLIGHT BULBS AND THE FRONT TURN SIGNAL LIGHT BULBS 3-41
REPLACING THE REAR TURN SIGNAL LIGHT BULBS 3-42
REPLACING THE TAIL/BRAKE LIGHT BULBS 3-43
ADJUSTING THE HEADLIGHT BEAMS 3-44
ADJUSTING THE DIGITAL CLOCK 3-44

EAS00036

PERIODIC CHECKS AND ADJUSTMENTS

INTRODUCTION

This chapter includes all information necessary to perform recommended checks and adjustments. If followed, these preventive maintenance procedures will ensure more reliable vehicle operation, a longer service life and reduce the need for costly overhaul work. This information applies to vehicles already in service as well as to new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

EAS00037

PERIODIC MAINTENANCE AND LUBRICATION INTERVALS

No.		ITEM	CHECK, MAINTENANCE AND LUBRICATION	ODMETER READING (x1,000km)					Annual check
				0.5	6	12	18	24	
1	*	Fuel line	• Check fuel hoses and vacuum hose for cracks or damage.		√	√	√	√	√
2		Spark plug	• Check condition. • Clean, regap.		√		√		
			• Replace.			√		√	
3	*	Valves	• Check valve clearance. • Adjust.		√	√	√	√	
4		Air filter	• Clean.		√		√		
			• Replace.			√		√	
5		V-belt (crankcase) air filter	• Clean.		√	√	√	√	
6	*	Battery	• Check electrolyte level and specific gravity. • Make sure that the breather hose is properly routed.		√	√	√	√	
7	*	Front brake (disc)	• Check operation, fluid level and vehicle for fluid leakage.(See NOTE on page 6-4)	√	√	√	√	√	√
			• Replace brake pads.	Whenever necessary					
8	*	Rear brake (drum)	• Check operation and adjust brake lever freeplay.	√	√	√	√	√	√
			• Replace brake shoes.	Whenever necessary					
9	*	Brake hose	• Check for cracks or damage.		√	√	√	√	√
			• Replace.	Every 4 years.					
10	*	Wheels	• Check runout and for damage.		√	√	√	√	
11	*	Tires	• Check tread depth and for damage. • Replace if necessary. • Check air pressure. • Correct if necessary.		√	√	√	√	
12	*	Wheel bearings	• Checks bearing for looseness or damage.		√	√	√	√	
13	*	Steering bearings	• Check bearing play and steering for roughness.	√	√	√	√	√	
			• Lubricate with lithium soap base grease.			√		√	
14		Chassis fasteners	• Make sure that all nuts, bolts and screws are properly tightened.		√	√	√	√	√
15		Centerstand	• Check operation. • Lubricate.		√	√	√	√	√

No.		ITEM	CHECK, MAINTENANCE AND LUBRICATION	ODMETER READING (x1,000km)					Annual check
				0.5	6	12	18	24	
16	*	Front fork	• Check operation and for oil leakage.		√	√	√	√	
17	*	Rear shock absorber assembly	• Check operation and shock absorber for oil leakage.		√	√	√	√	
18	*	Carburetor	• Check engine idling speed and starter operation.	√	√	√	√	√	√
19	*	Engine oil	• Change.	√	Every 3,000 km.				√
20	*	Engine oil filter strainer	• Clean.	√		√		√	
21	*	Final gear oil	• Check vehicle for oil leakage		√		√		
			• Change.	√		√		√	
22	*	Coolant system	• Check coolant level and vehicle for coolant leakage.		√	√	√	√	√
			• Change.	Every 3 years.					
23	*	V-belt	• Check wear and damage.		√	√	√	√	
			• Replace.	Every 18,000 km.					
24		Moving parts and cables	• Lubricate.		√	√	√	√	√
25	*	Light, signals and switches	• Check operation. • Adjust headlight beam.	√	√	√	√	√	√

* Since these items require special tools, data and technical skills, they should be serviced by a Yamaha or MBK dealer.

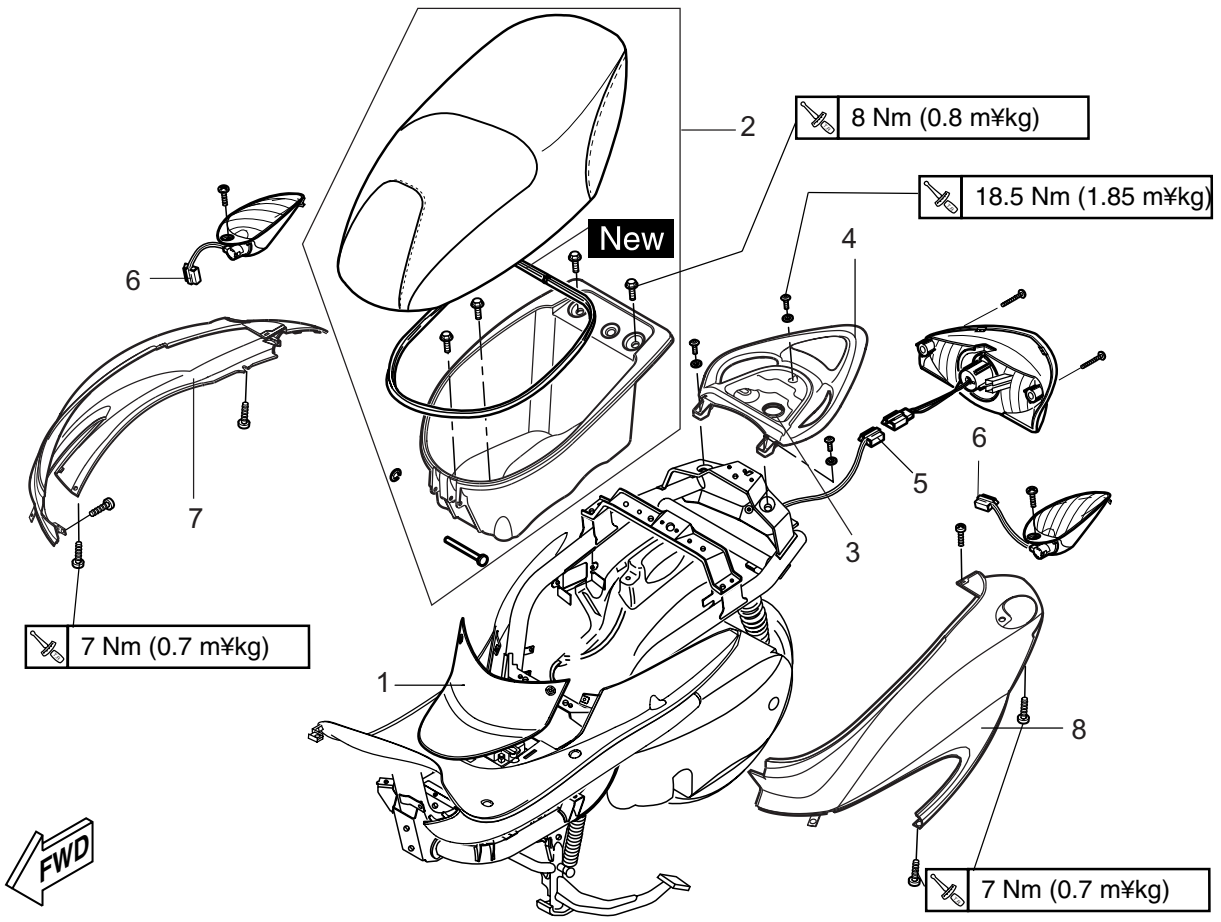
NOTE:

- The air filters need more frequent service if you are riding in unusually wet or dusty areas.
- Brake fluid replacement:
  1. Replace the brake fluid after disassembling the master cylinder or caliper cylinder.
  2. Check the brake fluid level and add fluid as required.
  3. Replace the brake hoses every four years or if cracked or damaged.

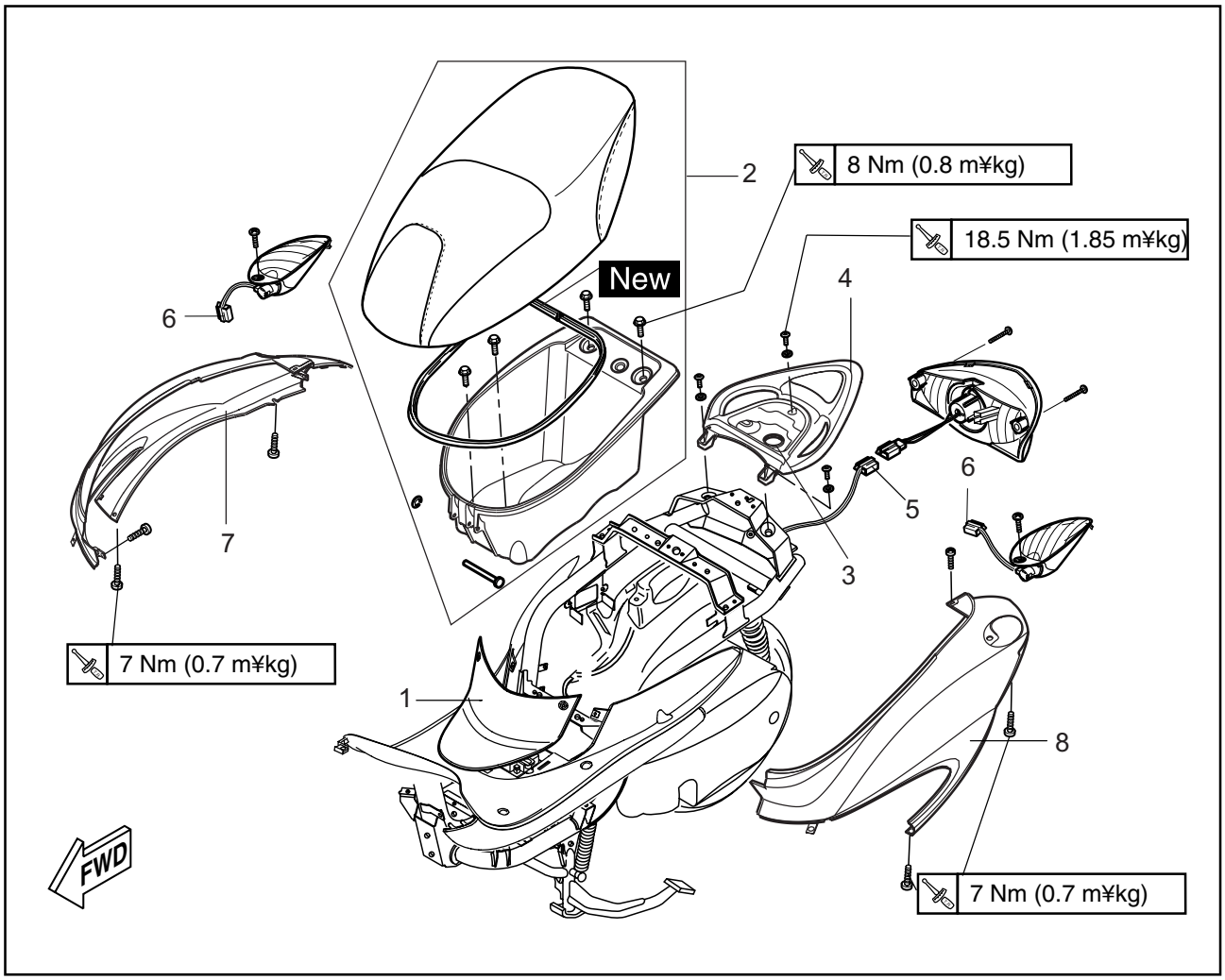
EASM0005

COVER AND PANEL

SIDE COVERS AND SEAT



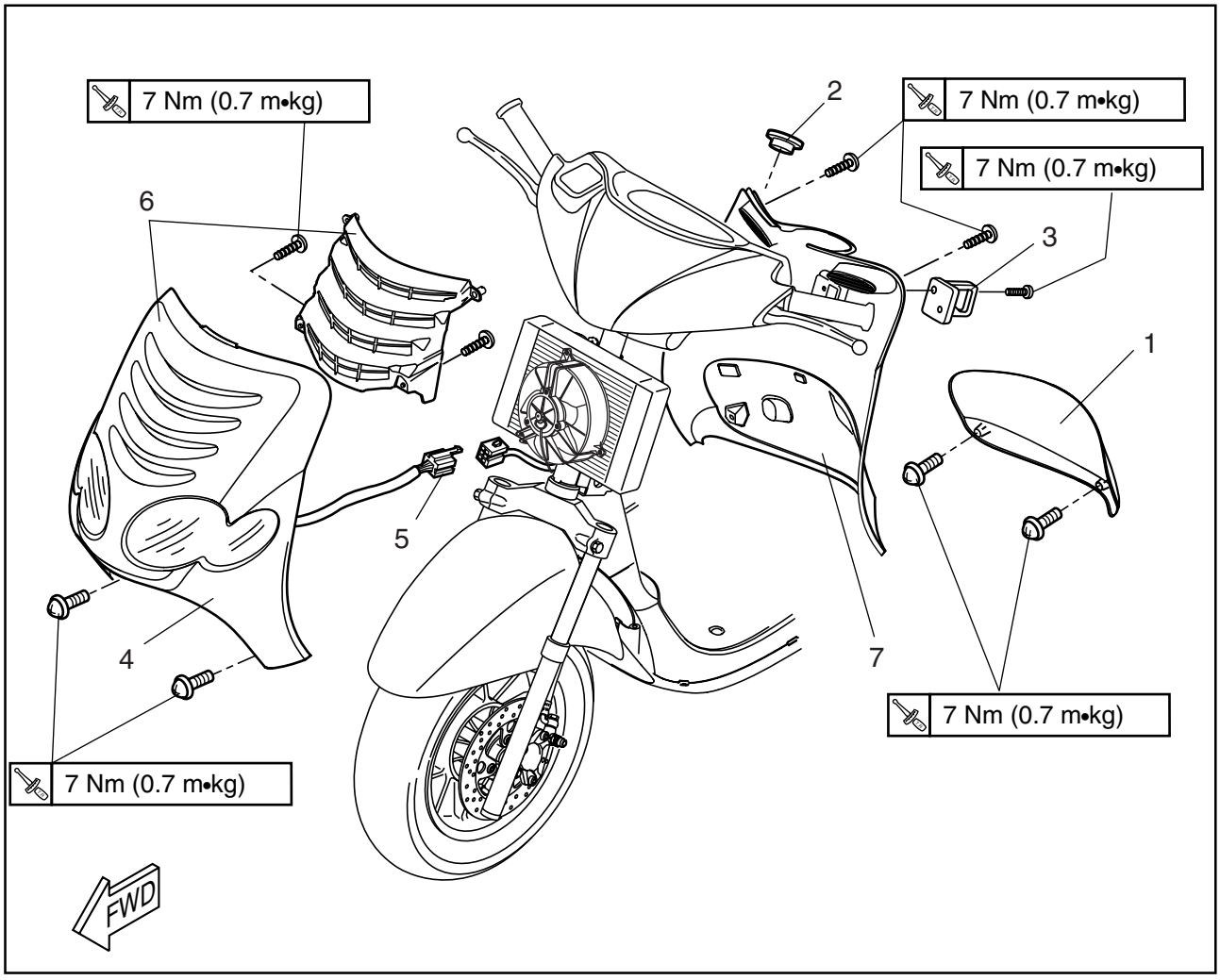
Order	Job/Part	Q'ty	Remarks
	Removing the side covers		Remove the parts in the order listed**.**
I	Remove:		
1	Battery cover	1	
2	Box and seat assembly	1	**NOTE:**
	Seat axle circlip	1	Open the seat to remove it.
	Seat axle	1	
	Seat	1	
	Gasket	1	
II	Unplug:		
3	Fuel tank overflow pipe	1	
III	Remove:		
4	Rear carrier	1	
IV	Disconnect:		
5	Taillight coupler	1	
6	Rear flasher light (left and right)	1	



Order	Job/Part	Q'ty	Remarks
V	Remove:		
7	Side cover (right)	1	
8	Side cover (left)	1	
			For installation, reverse the removal procedure.

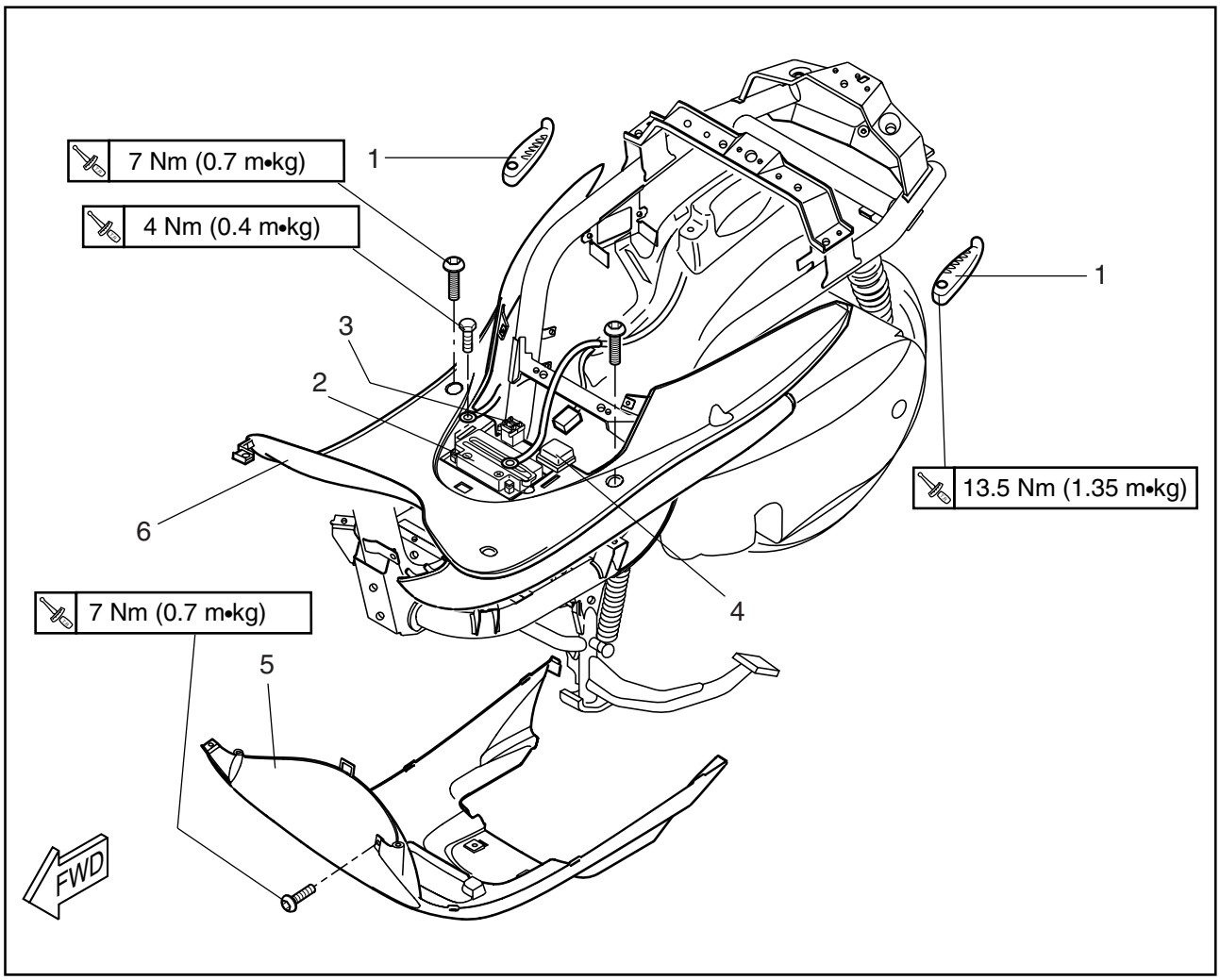
EASM0007

FRONT COVER, INNER PANEL AND INNER FRONT COVER



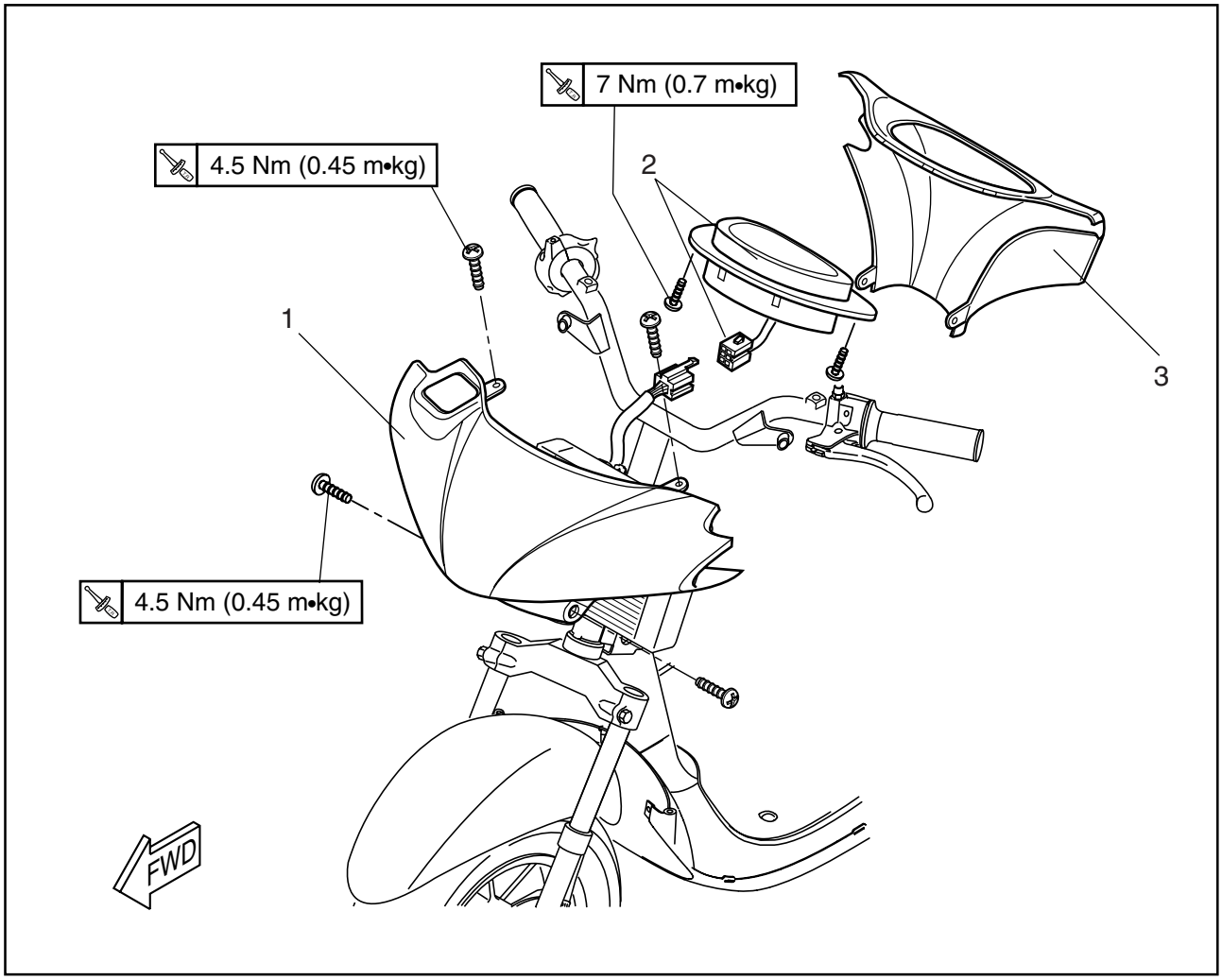
Order	Job/Part	Q'ty	Remarks
	Removing the front cover, inner panel and the inner front cover		Remove the parts in the order listed.
	Remove:		
1	Coolant tank cover	1	
2	Main switch cap	1	
3	Helmet holder	1	
II	Untight:		
4	Front cover	1	
III	Disconnect		
5	Headlight lead	1	
IV	Remove:		
6	Front cover / Radiator panel	1/1	
7	Inner panel	1	
			For installation, reverse the removal procedure.

EASM0008
FOOTREST BOARD AND UNDER COVER



Order	Job/Part	Q'ty	Remarks
	Removing the footrest board and under cover		Remove the parts in the order listed.
I	Remove:		
	Side covers	2	Refer to "SIDE COVERS AND SEAT" section.
	Inner panel	1	Refer to "FRONT COVER, INNER PANEL AND INNER FRONT COVER" section.
II	Remove:		
1	Footrest	2	1 washer/1 spring washer/1 washer
2	Battery	1	
3	Fuses box		
4	Starter relay	1	
5	Under cover	1	
6	Side under cover/footrest board assembly	1/1	For installation, reverse the removal procedure.

EASM0009
HANDLEBAR COVERS



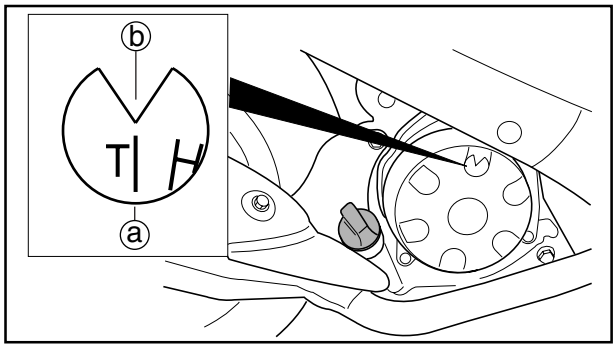
Order	Job/Part	Q'ty	Remarks
	Removing the handlebar covers		Remove the parts in the order listed.
I	Remove:		
1	Front handlebar cover	1	
II	Disconnect:		
2	Speedometer assy' lead		
III	Remove:		
3	Inner handlebar cover	1	
			For installation, reverse the removal procedure.

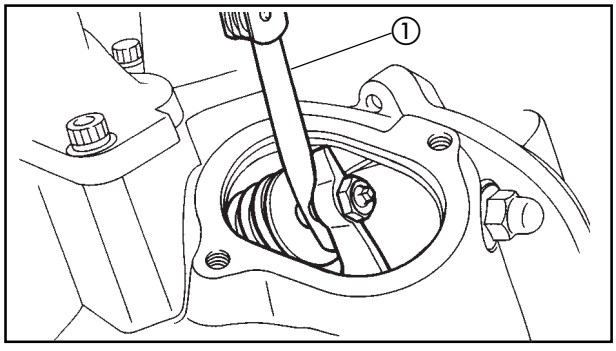
EAS00049
ENGINE
ADJUSTING THE VALVE CLEARANCE
The following procedure applies to all of the valves.

NOTE:
- Valve clearance adjustment should be made on a cold engine, at room temperature.
- When the valve clearance is to be measured or adjusted, the piston must be at top dead center (TDC) on the compression stroke.

1. Remove:
   - Battery cover
   - Seat
   - Side covers
   - Box
     Refer to "SIDE COVERS AND SEAT" section.
   - Spark plug
   - Plug on magneto cover
   - Valve cover "inlet"
   - Valve cover "exhaust"
2. Measure:
   - valve clearance
     Out of specification → Adjust.

Valve clearance (cold)
Intake valve
0.10 ~ 0.14 mm
Exhaust valve
0.16 ~ 0.20 mm

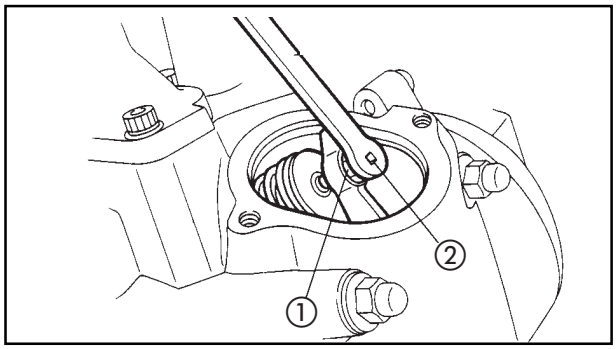


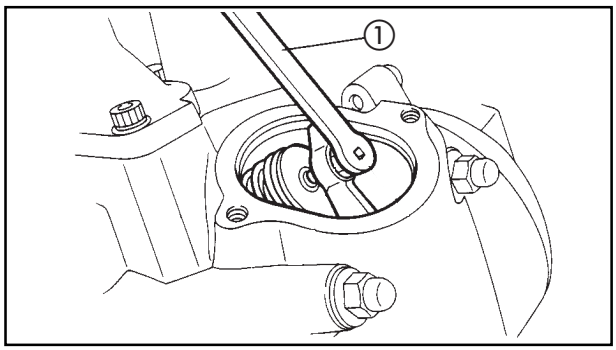


▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Turn the crankshaft counterclockwise.
b. When the piston is at TDC on the compression stroke, align the mark ⓐ on the generator rotor with the stationary pointer ⓑ on the crankcase.
c. Measure the valve clearance with a thickness gauge ①.
   Out of specification → Adjust.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲





3. Adjust:
   • valve clearance

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Loosen the locknut ①.
b. Insert a thickness gauge between the end of the adjusting screw and the valve tip.
c. Turn the adjusting screw ② in or out until the specified valve clearance is obtained.

Turning in	**→ Valve clearance is decreased.**
Turning out	**→ Valve clearance is increased.**

Valve adjusting tool ①
90890-01311

Hold the adjusting screw to prevent it from moving and tighten the locknut to specification.

Locknut
6.5 Nm (0.65 m•kg)

d. Measure the valve clearance again.
e. If the valve clearance is still out of specification, repeat all of the valve clearance adjustment steps until the specified clearance is obtained.

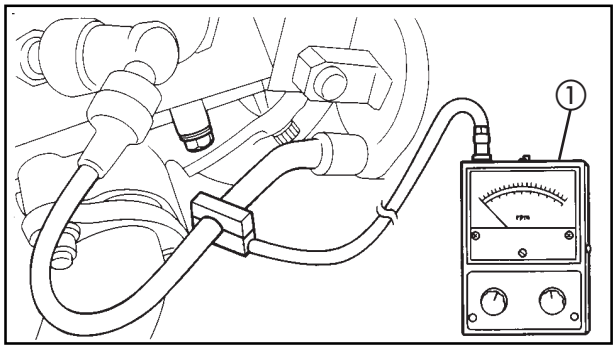
▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

4. Install:
   • Box
   • Side covers
   • Seat
   • Battery cover
   Refer to “SIDE COVERS AND SEAT” section.

EASM0010
ADJUSTING THE ENGINE IDLING SPEED

NOTE:
Prior to adjusting the engine idling speed, the air filter element should be clean, and the engine should have adequate compression.

1. Start the engine and let it warm up for several minutes.



2. Attach:
   • engine tachometer
   (onto the spark plug lead of the cylinder)

	Engine tachometer ① **90890-03113**

3. Measure:
   • engine idling speed
   Out of specification → Adjust.

	Engine idling speed **1,400 ~ 1,800 r / min**

4. Adjust:
   • engine idling speed

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Turn the pilot screw in until it is lightly seated.
b. Turn the pilot screw out the specified number of turns.

	Pilot screw setting **XN 125: 2 1/4 ~ 2 3/4** **XN 150: 2 ~ 4**

c. Turn the throttle stop screw in or out until the specified engine idling speed is obtained.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

Turning in	**→ Engine idling speed is increased.**
Turning out	**→ Engine idling speed is decreased.**

5. Adjust:
   • throttle cable free play
   Refer to “ADJUSTING THE THROTTLE CABLE FREE PLAY”.

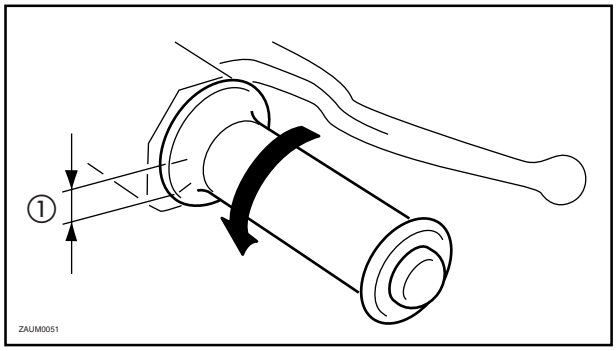
	Throttle cable free play **(at the flange of the throttle grip)** **1.5 ~ 3 mm**

EASM0011

ADJUSTING THE THROTTLE CABLE FREE PLAY

NOTE:

Prior to adjusting the throttle cable free play, the engine idling speed should be adjusted.



1. Check:
   • throttle cable free play ①
   Out of specification → Adjust.

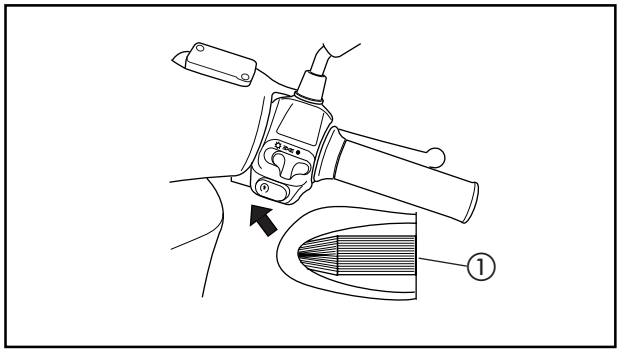
Throttle cable free play
(at the flange of the throttle grip)
1.5 ~ 3 mm

2. Adjust:
   • throttle cable free play

NOTE:

When the throttle is opened, the accelerator cable is pulled.

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼



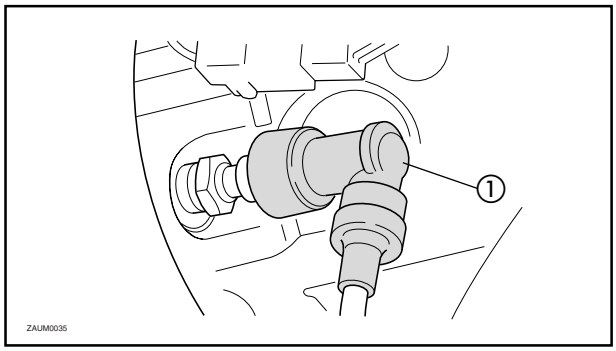
a. Turn the adjusting nut ① in or out until the specified throttle cable free play is obtained.

Turning in →	**Throttle cable free play is increased.**
Turning out →	**Throttle cable free play is decreased**.

⚠ WARNING

After adjusting the throttle cable free play, start the engine and turn the handlebar to the right and to the left to ensure that this does not cause the engine idling speed to change.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲



EAS00060
CHECKING THE SPARK PLUG

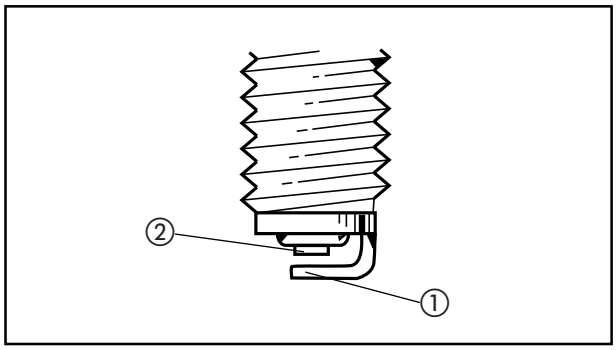
1. Disconnect:
   • spark plug cap ①
2. Remove:
   • spark plug

CAUTION:

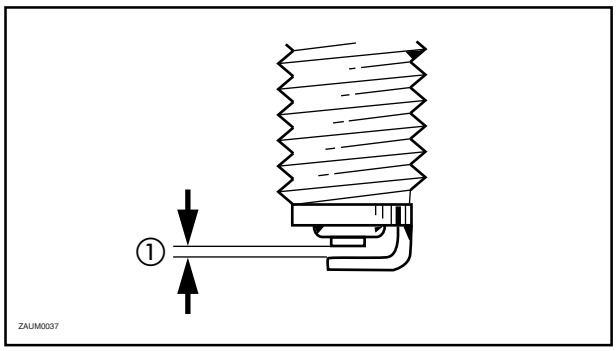
Before removing the spark plug, blow away any dirt accumulated in the spark plug well with compressed air to prevent it from falling into the cylinder.

3. Check:
   • spark plug type
   Incorrect → Change.

Spark plug type (manufacturer)
CR8E (NGK)



4. Check:
   • electrodes ①
     Damage/wear → Replace the spark plug.
   • insulator ②
     Abnormal color → Replace the spark plug.
     Normal color is medium-to-light tan.



5. Clean:
   • spark plug
     (with a spark plug cleaner or wire brush)
6. Measure:
   • spark plug gap ①
     (with a wire gauge)
     Out of specification → Regap.

Spark plug gap
0.5 ~ 0.7 mm

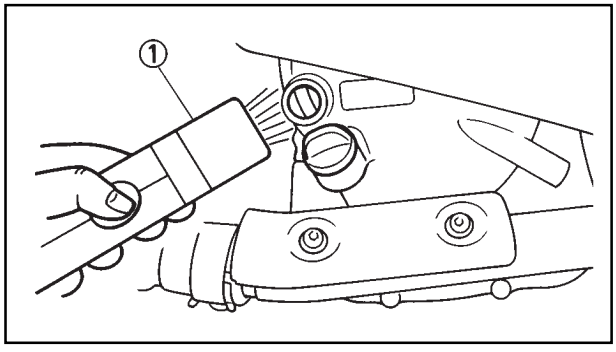
7. Install:
   • spark plug **13 Nm (1.3m•kg)**

NOTE:
Before installing the spark plug, clean the spark plug and gasket surface.

8. Connect:
   • spark plug cap

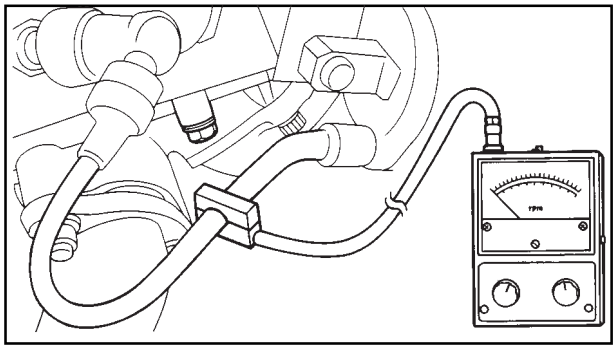
EAS00061
CHECKING THE IGNITION TIMING

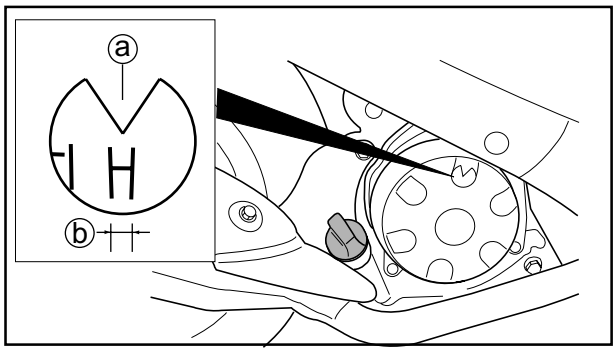
NOTE:
Prior to checking the ignition timing, check the wiring connections of the entire ignition system. Make sure all connections are tight and free of corrosion.

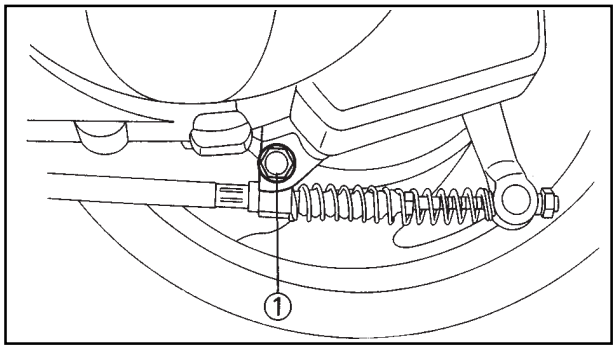


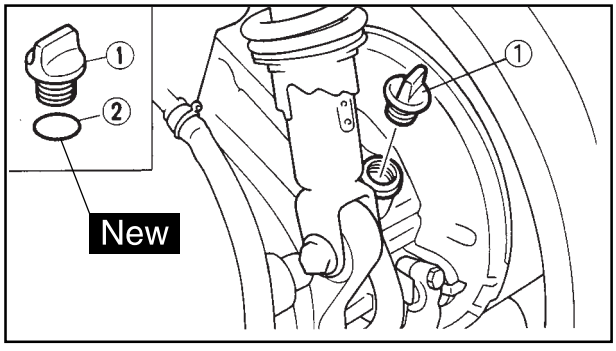
1. Attach:
   • timing light ①
   • engine tachometer ②
     (onto the spark plug lead of the cylinder)

Timing light
90890-03141
Engine tachometer
90890-03113









2. Check:
   • ignition timing

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Start the engine, warm it up for several minutes, and then let it run at the specified engine idling speed.

Engine idling speed
1,400 ~ 1,800 r/min

b. Check that the mark ⓐ is within the required firing range ⓑ on the timing plate.
   Incorrect firing range → Check the ignition system.

NOTE:
The ignition timing is not adjustable.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

TRANSMISSION OIL REPLACEMENT

NOTE:
Make sure the scooter is upright when replacing the oil.

1. Stand the scooter on a level surface.
2. Start the engine for several minutes to warm it up and then stop.
3. Place an oil pan under the crankcase.
4. Remove:
   • oil filler cap
   • drain bolt ①
   Drain the oil.
5. Tighten:
   • drain bolt **22 Nm (2.2m•kg)**
6. Fill:
   • crankcase

Recommended oil:
SAE 10W30 motor oil (API, SE)
Oil quantity:
0.15L

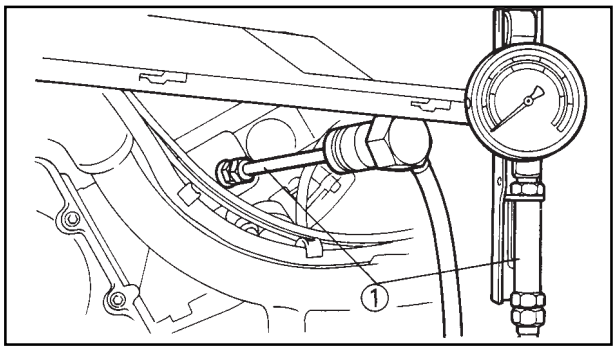
CAUTION:
Wipe any spilled oil off the tire or the wheel.

7. Install:
   • oil filler cap ①
   • O-ring ② New
8. Start the engine for several minutes to warm it up and check for the oil leakage.

EAS00067
MEASURING THE COMPRESSION PRESSURE

NOTE:
Insufficient compression pressure will result in a loss of performance.

1. Measure:
   • valve clearance
   Out of specification → Adjust
   Refer to "ADJUSTING THE VALVE CLEARANCE" section.
2. Start the engine, warm it up for several minutes, and then turn it off.
3. Disconnect:
   • spark plug cap
4. Remove:
   • spark plug



CAUTION:
Before removing the spark plug, use compressed air to blow away any dirt accumulated in the spark plug well to prevent it from falling into the cylinder.

5. Install:
   • compression gauge ①

Compression gauge
90890-03081

6. Measure:
   • compression pressure
   Out of specification → Refer to steps (c) and (d).
   • Compression pressure (at sea level)

Minimum
1,120 kPa (11.20 kg/cm²)
Standard
1,400 kPa (14.00 kg/cm²)

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

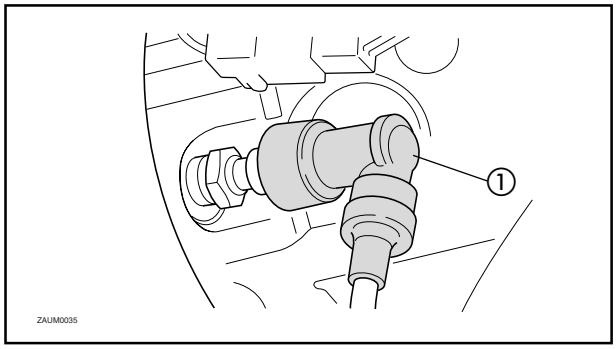
a. Set the main switch to "ON".
b. With the throttle wide open, crank the engine until the reading on the compression gauge stabilizes.

⚠ WARNING
To prevent sparking, ground the spark plug lead before cranking the engine.

c. If the compression pressure is above the maximum specification, check the cylinder head, valve surfaces, and piston crown for carbon deposits.
   Carbon deposits → Remove.
d. If the compression pressure is below the minimum specification, squirt a few drops of oil into the cylinder and measure again.
   Refer to the following table.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

Compression pressure (with oil applied into the cylinder)	
Reading	**Diagnosis**
Higher than without oil	**Piston wear or damage → Repair.**
Same as without oil	**Piston ring(s), valves, cylinder head gasket or piston possibly defective → Repair.**



7. Install:
   • spark plug **13 Nm (1.3m•kg)**
8. Connect:
   • spark plug cap ①

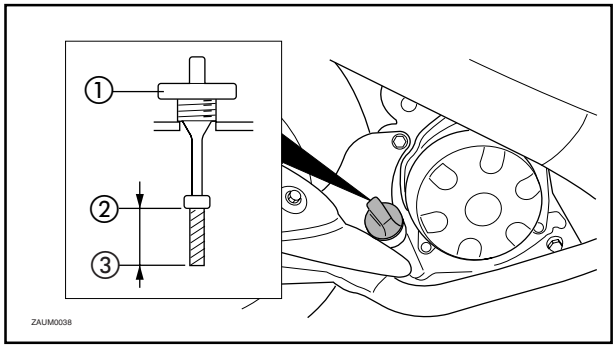
EAS00070
CHECKING THE ENGINE OIL LEVEL

1. Stand the scooter on a level surface.

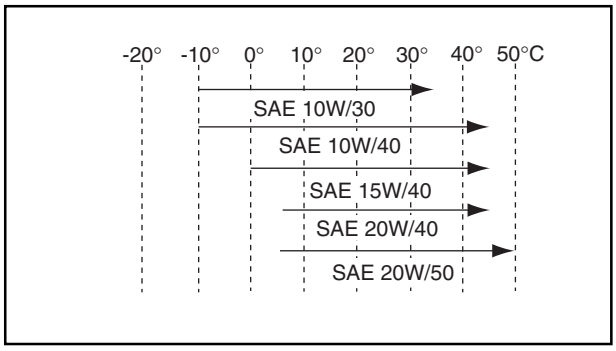
NOTE:
- Place the scooter on a suitable stand.
- Make sure the scooter is upright.

2. Start the engine, warm it up for several minutes, and then turn it off.

NOTE:
- Before checking the engine oil level, wait a few minutes until the oil has settled.
- Do not screw the dipstick ① in when inspecting the oil level.



3. Check:
   • engine oil level
   The engine oil level should be between the minimum level mark ③ and maximum level mark ②.
   Below the minimum level mark → Add the recommended engine oil to the proper level.



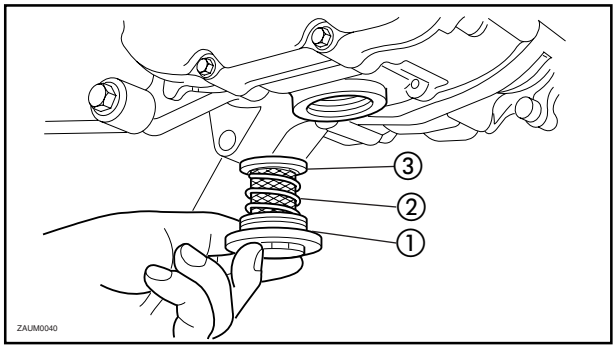
Recommended oil
Refer to the chart for the engine oil grade which is best suited for certain atmospheric temperatures.
API standard
SE or higher grade
(Non-friction modified)

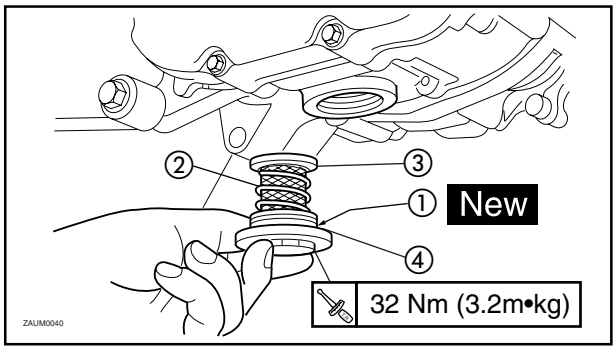
CAUTION:
Do not allow foreign materials to enter the crankcase.

NOTE:
Before checking the engine oil level, wait a few minutes until the oil has settled.

4. Start the engine, warm it up for several minutes, and then turn it off.
5. Check the engine oil level again.

NOTE:
Before checking the engine oil level, wait a few minutes until the oil has settled.





EASM0012
CHANGING THE ENGINE OIL

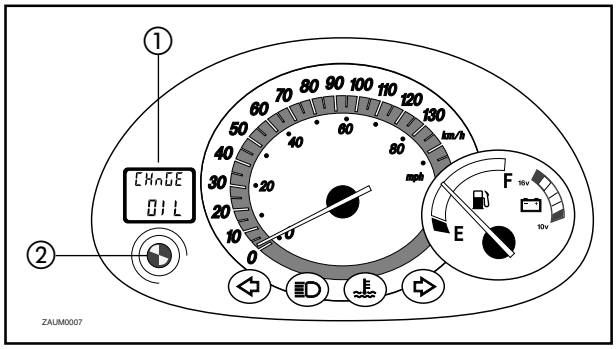
1. Start the engine and let it warm up for several minutes.
2. Turn off the engine and place an oil pan under the engine.
3. Remove:
   - Oil filler plug
   - Drain plug ①
   - Compression spring ②
   - Oil strainer ③
   - O-ring

   Drain the crankcase of its oil.
4. Install:
   - O-ring ① New
   - Compression spring ②
   - Oil strainer ③
   - Drain plug ④ **32 Nm (3.2m•kg)**
   - Oil filler plug
5. Fill:
   - Crankcase

Oil quantity:
1.2 L

6. Check:
   - Engine oil level

   Refer to “CHECKING THE ENGINE OIL LEVEL” section.



7. Reset:
   • engine oil warning circuit ①

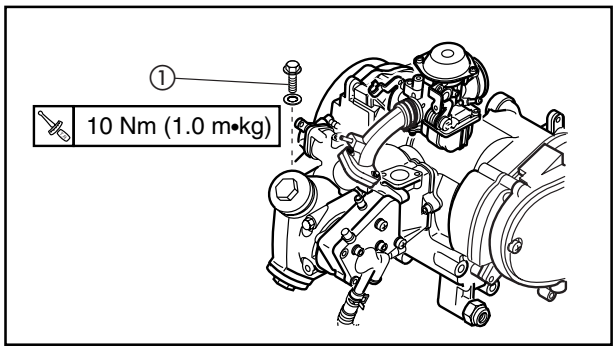
▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Press the "TRIP" button ② while turning the key to "ON"
b. Release the "TRIP" button and oil indicator light will go off

NOTE:

- If the oil is change before the oil indicator light comes on (i.e. before the 3,000 km oil change interval is reached), be sure to reset the oil indicator light after changing oil, so that it will indicate the next 3,000 km oil remplacement at the correct time.
- To reset the oil change indicator light before the periodic oil change interval has been reached, follow the above procedure.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲



EASM0013

MEASURING THE ENGINE OIL PRESSURE

1. Remove:
   • side covers
   Refer to "SIDE COVERS AND SEAT" section.
2. Inspect:
   • oil pressure

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Slightly loosen the oil check bolt ①.
b. Start the engine and keep it idling until the oil begins to seep from the oil check bolt.
   If no oil comes out after one minute, turn the engine off so it will not seize.
c. Check oil passages and oil pump for damage or leakage.
d. Start the engine after solving the problem(s), and recheck the oil pressure.
e. Tighten the oil check bolt to specification.

	Oil check bolt **10Nm (1.0m•kg)**

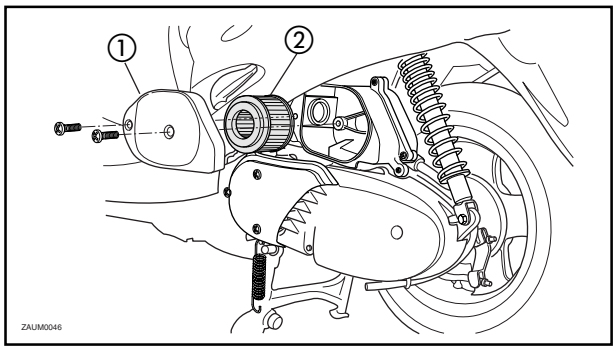
CAUTION:

- **Start the engine and check the oil pressure with the oil check bolt loosened.**
- **Do not apply at high speeds more than specified when checking the pressure.**

NOTE:

Wipe any spilled oil off the engine.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲



EAS00086
CLEANING THE AIR FILTER ELEMENT

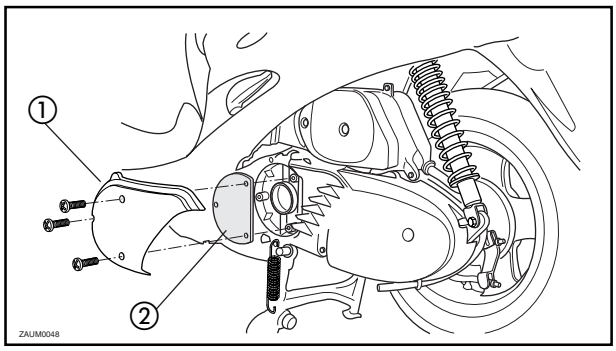
1. Remove:
   • air filter case cover ①
2. Clean:
   • air filter element ②
   Apply compressed air to the outer surface of the air filter element.
3. Check:
   • air filter element ②
   Damage → Replace.
4. Install:
   • air filter element ②
   • air filter case cover ①

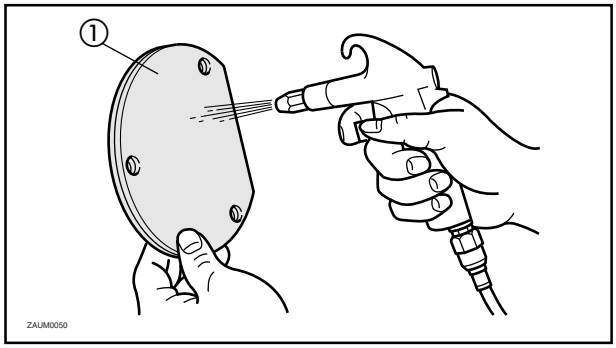
CAUTION:

Never operate the engine without the air filter element installed. Unfiltered air will cause rapid wear of engine parts and may damage the engine. Operating the engine without the air filter element will also affect the carburetor tuning, leading to poor engine performance and possible overheating.

NOTE:

When installing the air filter element into the air filter case cover, make sure their sealing surfaces are aligned to prevent any air leaks.





EAS00091
CLEANING THE V-BELT CASE AIR FILTER ELEMENT

1. Remove:
   • V-belt case air filter cover ①
   • V-belt case air filter element ②
2. Clean:
   • V-belt case air filter element ①
   Apply compressed air to the outer surface of the primary fixed sheave air filter element.
3. Check:
   • V-belt case air filter element
   Damage → Replace.

CAUTION:

Since the V-belt case air filter element is a dry type, do not let grease or water contact it.

4. Install:
   • V-belt case air filter element
   • V-belt case air filter cover **7 Nm (0.7m•kg)**

EAS00096
CHECKING THE FUEL AND VACUUM HOSES

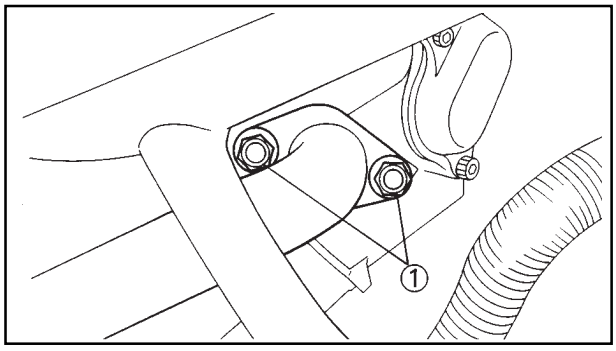
The following procedure applies to all of the fuel and vacuum hoses.

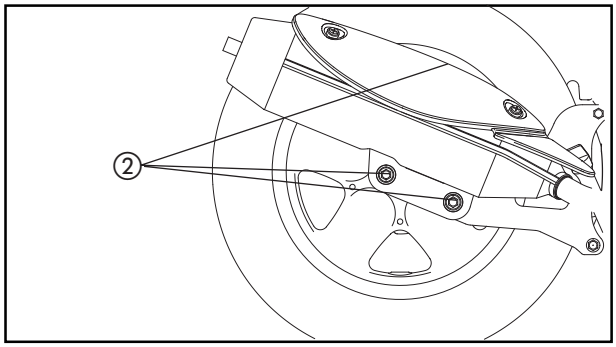
1. Remove:
   - Seat
   - Box

   Refer to "SIDE COVERS AND SEAT" section.
2. Check:
   - vacuum hose
   - fuel hose

   Cracks/damage → Replace.
   Loose connection → Connect properly.
3. Install:
   - Box
   - Seat

   Refer to "SIDE COVERS AND SEAT" section.





EASM0014
EXHAUST SYSTEM INSPECTION

1. Remove:
   - Side covers

   Refer to "SIDE COVERS AND SEAT" section.
2. Inspect:
   - Nut ① (exhaust pipe) **11 Nm (1.1 m•kg)**

   Loose/Damage → Tighten/Replace.
   - Gasket (exhaust pipe) New

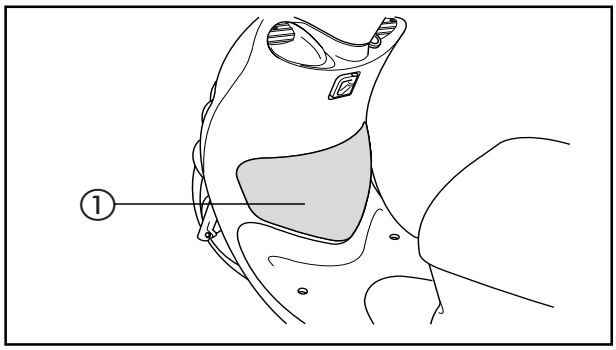
   Exhaust gas leaks → Tighten/Replace
3. Inspect:
   - Bolt ② (mufler) **27 Nm (2.7 m•kg)**

   Loose/Damage → Tighten/Replace

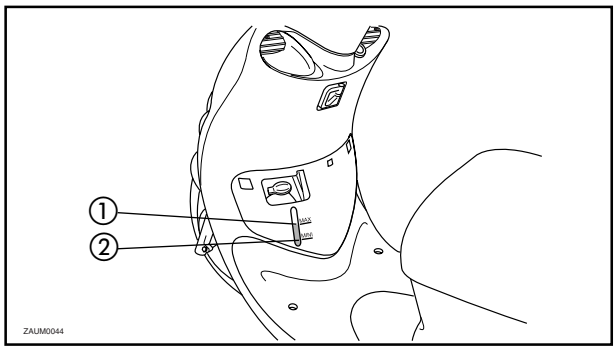
EAS00103
CHECKING THE COOLANT LEVEL

1. Stand the scooter on a level surface.

NOTE:
Place the scooter on a suitable stand.
Make sure the scooter is upright.



2. Remove:
   • Coolant tank cover ①
   Refer to "FRONT COVER, INNER PANEL AND INNER FRONT COVER" section.



3. Check:
   • coolant level
   The coolant level should be between the maximum level mark ① and minimum level mark ②.
   Below the minimum level mark → Add the recommended coolant to the proper level.

CAUTION:
- **Adding water instead of coolant lowers the antifreeze content of the coolant. If water is used instead of coolant check, and if necessary, correct the antifreeze concentration of the coolant.**
- **Use only distilled water. However, if distilled water is not available, soft water may be used.**

4. Start the engine, warm it up for several minutes, and then turn it off.
5. Check:
   • coolant level

NOTE:
Before checking the coolant level, wait a few minutes until it settles.

6. Install:
   • Coolant tank cover
   Refer to "FRONT COVER, INNER PANEL AND INNER FRONT COVER" section.

EAS00105
CHANGING THE COOLANT

1. Remove:
   - Side covers
   - Seat
   - Rear carrier
   - Box

   Refer to “SIDE COVERS AND SEAT” section.
   - Front cover
   - Inner panel

   Refer to “FRONT COVER, INNER PANEL AND INNER FRONT PANEL” section.
2. Disconnect:
   - coolant reservoir hose
3. Drain:
   - coolant

   (from the coolant reservoir)
4. Remove:
   - radiator cap

⚠ WARNING

A hot radiator is under pressure. Therefore, do not remove the radiator cap when the engine is hot. Scalding hot fluid and steam may be blown out, which could cause serious injury. When the engine has cooled, open the radiator cap as follows:
Place a thick rag or a towel over the radiator cap and slowly turn the radiator cap counterclockwise toward the detent to allow any residual pressure to escape. When the hissing sound has stopped, press down on the radiator cap and turn it counterclockwise to remove.

The following procedure applies to all of the coolant drain bolts and copper washers.

5. Remove:
   - coolant drain bolt (water pump)

     (along with the copper washer)
   - coolant drain bolt (engine)

     (along with the copper washer)
6. Drain:
   - coolant

     (from the engine and radiator)

7. Check:
   - copper washer (coolant drain bolt-engine)
   - copper washer (coolant drain bolt-water pump)

   Damage → Replace.
8. Install:
   - coolant drain bolt (engine)

     10 Nm (1.0m•kg)
   - coolant drain bolt (water pump)

     10 Nm (1.0m•kg)
9. Connect:
   - coolant reservoir hose
10. Fill:
    - cooling system

      (with the specified amount of the recommended coolant)

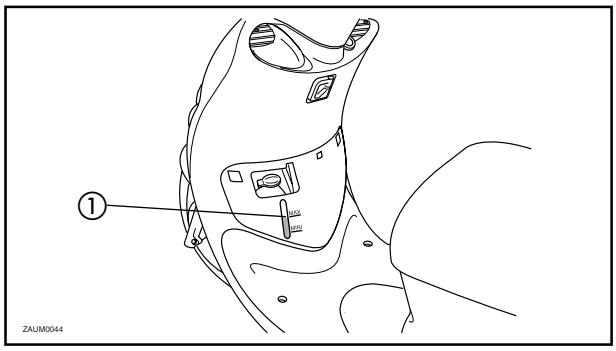
Recommended antifreeze
High-quality ethylene glycol antifreeze containing corrosion inhibitors for aluminum engines
Mixing ratio
1:1 (antifreeze:water)
Quantity
Total amount
1.1 L
Coolant reservoir capacity
0.35 L

Handling notes for coolant
Coolant is potentially harmful and should be handled with special care.

⚠ WARNING
- **If coolant splashes in your eyes, thoroughly wash them with water and consult a doctor.**
- **If coolant splashes on your clothes, quickly wash it away with water and then with soap and water.**
- **If coolant is swallowed, induce vomiting and get immediate medical attention.**

CAUTION:

- **Adding water instead of coolant lowers the antifreeze content of the coolant. If water is used instead of coolant check, and if necessary, correct the antifreeze concentration of the coolant.**
- **Use only distilled water. However, if distilled water is not available, soft water may be used.**
- **If coolant comes into contact with painted surfaces, immediately wash them with water.**
- **Do not mix different types of antifreeze.**



11. Install:
    - radiator cap
12. Fill:
    - coolant reservoir
      (with the recommended coolant to the maximum level mark ①)
13. Install:
    - coolant reservoir cap
14. Start the engine, warm it up for several minutes, and then stop it.
15. Check:
    - coolant level
      Refer to "CHECKING THE COOLANT LEVEL" section.

NOTE:

Before checking the coolant level, wait a few minutes until the coolant has settled.

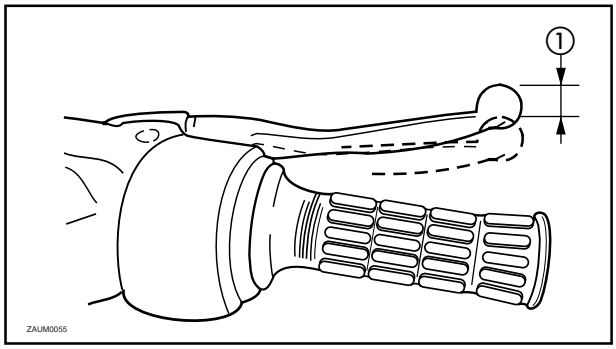
16. Install:
    - Inner panel
    - Front cover
      Refer to "FRONT COVER, INNER PANEL AND INNER FRONT PANEL" section.
    - Box
    - Rear carrier
    - Seat
    - Side covers
      Refer to "SIDE COVERS AND SEAT" section.

EASM0015

INSPECTING THE COOLANT SYSTEM

1. Inspect:
   - Radiator
   - Filler hose (radiator)
   - Outlet hose (radiator)
   - Pipe
   - Outlet hose (radiator)

   Cracks/Damage → Replace
   Refer to “COOLING SYSTEM” section in chapter 5.



EASM0016

CHASSIS

CHECKING THE FRONT BRAKE LEVER FREE PLAY

1. Check:
   • brake lever free play ①
   Out of specification → check the front brake system.
   Refer to "FRONT BRAKE" section in chapter 7.

Brake lever free play (at the end of the brake lever)
10 ~ 20 mm

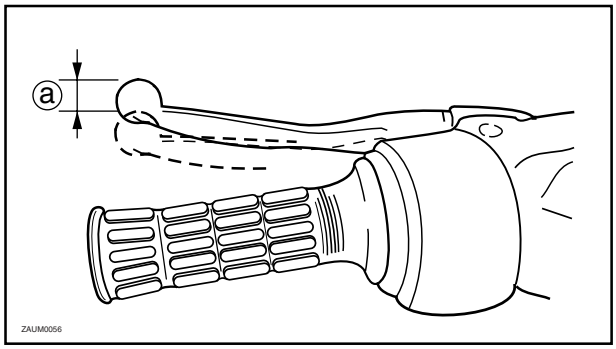
⚠ WARNING

A soft or spongy feeling in the brake lever can indicate the presence of air in the brake system. Before the vehicle is operated, the air must be removed by bleeding the brake system. Air in the brake system will considerably reduce braking performance and could result in loss of control and possibly an accident. Therefore, check and, if necessary, bleed the brake system.

EAS00114

ADJUSTING THE REAR BRAKE

1. Check:
   • brake lever free play ⓐ
   Out of specification → Adjust.

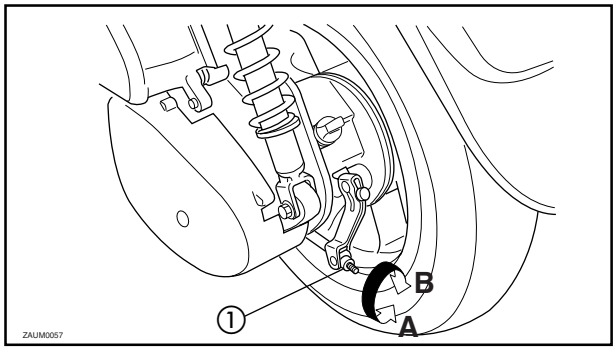


Brake lever free play
10 ~ 20 mm

2. Adjust:
   • brake lever free play
   • Handlebar side
   • Rear wheel side

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Turn the adjusting nut ① in direction A or B until the specified brake lever free play is obtained.



Direction A →	**Brake lever free play is increased.**
Direction B →	**Brake lever free play is decreased.**

CAUTION:

After adjusting the brake lever free play, make sure there is no brake drag.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

EAS00116

CHECKING THE BRAKE FLUID LEVEL

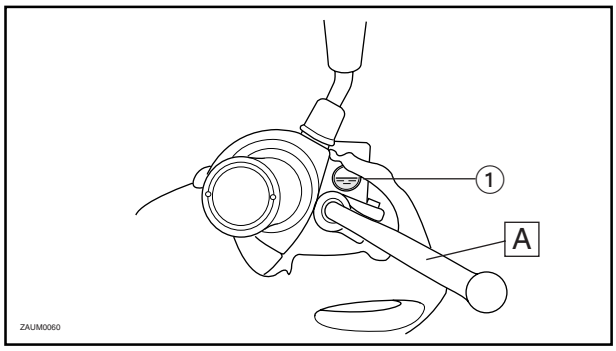
1. Stand the scooter on a level surface.

NOTE:

- Place the scooter on a suitable stand.
- Make sure the scooter is upright.

2. Check:
   - brake fluid level

   Below the minimum level mark ① → Add the recommended brake fluid to the proper level.



Recommended brake fluid
DOT#3 or DOT#4

A Front brake

⚠ WARNING

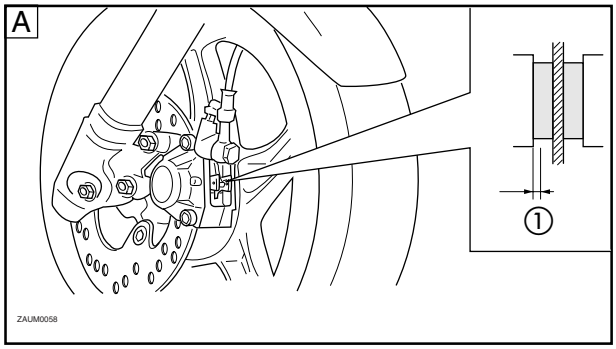
- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

CAUTION:

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

NOTE:

In order to ensure a correct reading of the brake fluid level, make sure the top of the reservoir is horizontal.



EASM0017

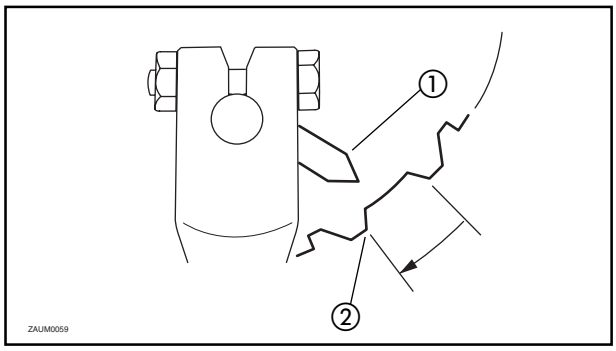
CHECKING THE BRAKE PADS

The following procedure applies to all of the brake pads.

1. Operate the brake.
2. Check:
   - brake pad thickness ①
     Less than specification → Replace the brake pads as a set.
     Refer to "FRONT BRAKE" section in chapter 7.

Brake pad thickness wear limit
0.8 mm

A Front brake



EAS00126

CHECKING THE BRAKE SHOES

1. Operate the brake.
2. Check:
   - wear indicator ①
     Reaches the wear limit line ② → Replace the brake shoes as a set.
     Refer to "REAR WHEEL AND BRAKE" section in chapter 7.

EAS00131

CHECKING THE BRAKE HOSES

The following procedure applies to all of the brake hoses and brake hose clamps.

1. Check:
   - brake hose
     Cracks/damage/wear → Replace.
2. Check:
   - brake hose clamp
     Loose → Tighten the clamp bolt.
3. Hold the motorcycle upright and apply the brake several times.
4. Check:
   - brake hose
     Activate the brake several times.
     Brake fluid leakage → Replace the damaged hose.
     Refer to "FRONT WHEEL AND BRAKE DISC" and "REAR WHEEL AND BRAKE" section in chapter 7.

EAS00133
BLEEDING THE HYDRAULIC BRAKE SYSTEM

⚠ WARNING

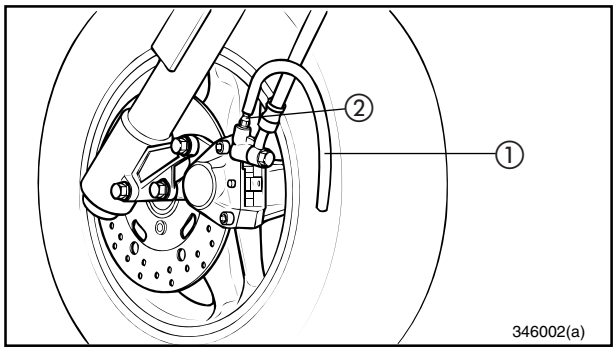
Bleed the hydraulic brake system whenever:
- **the system is disassembled,**
- **a brake hose is loosened, disconnected or replaced,**
- **the brake fluid level is very low,**
- **brake operation is faulty.**

NOTE:
- Be careful not to spill any brake fluid or allow the brake master cylinder reservoir to overflow.
- When bleeding the hydraulic brake system, make sure there is always enough brake fluid before applying the brake. Ignoring this precaution could allow air to enter the hydraulic brake system, considerably lengthening the bleeding procedure.
- If bleeding is difficult, it may be necessary to let the brake fluid settle for a few hours. Repeat the bleeding procedure when the tiny bubbles in the hose have disappeared.

1. Bleed:
   - hydraulic brake system

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Fill the brake fluid reservoir to the proper level with the recommended brake fluid.
b. Install the brake master cylinder reservoir diaphragm.
c. Connect a clear plastic hose ① tightly to the bleed screw ②.
d. Place the other end of the hose into a container.
e. Slowly squeeze the brake lever several times.
f. Fully squeeze the brake lever without releasing it.
g. Loosen the bleed screw.



NOTE:
Loosening the bleed screw will release the pressure and cause the brake lever to contact the throttle grip.

h. Tighten the bleed screw and then release the brake lever.

i. Repeat steps (e) to (h) until all of the air bubbles have disappeared from the brake fluid in the plastic hose.
j. Tighten the bleed screw to specification.

	Bleed screw **6 Nm (0.6 m•kg)**

k. Fill the brake fluid reservoir to the proper level with the recommended brake fluid.
Refer to "CHECKING THE BRAKE FLUID LEVEL" section.

⚠ WARNING

After bleeding the hydraulic brake system, check the brake operation .

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

EAS00148

CHECKING AND ADJUSTING THE STEERING HEAD

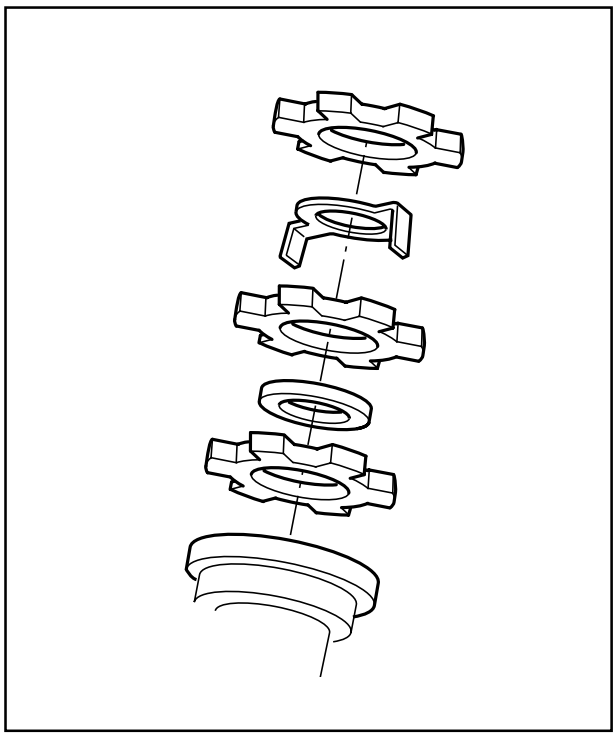
1. Stand the scooter on a level surface.

⚠ WARNING

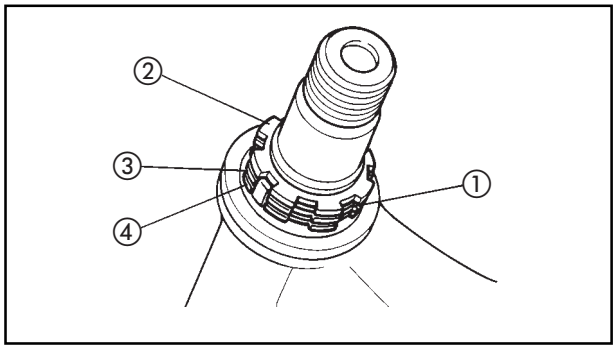
Securely support the scooter so that there is no danger of it falling over.

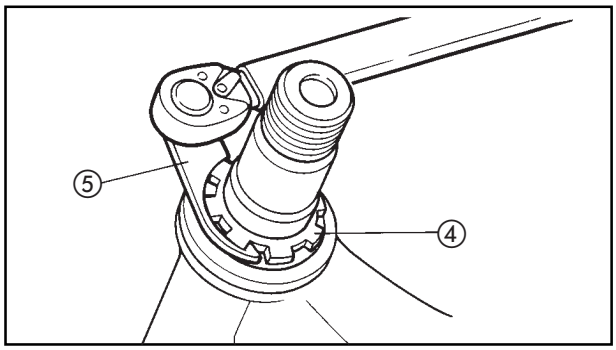
NOTE:

Place the scooter on a suitable stand so that the front wheel is elevated.



2. Check:
   • steering head
   Grasp the bottom of the front fork legs and gently rock the front fork.
   Binding/looseness → Adjust the steering head.
3. Remove:
   • Handlebar cover
   Refer to "HANDLEBAR COVERS" section.
   • Handlebar
   Refer to "HANDLEBAR" section in chapter 7.
4. Adjust:
   • steering head





a. Remove the lock washer ①, the upper ring nut ②, the center ring nut ③ and the rubber washer.
b. Loosen the lower ring nut ④ and then tighten it to specification with the ring nut wrench ⑤.

NOTE:
Set the torque wrench at a right angle to the ring nut wrench.

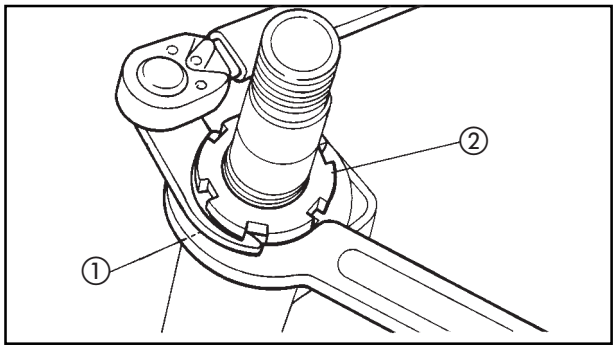
	Steering nut wrench **90890-01403**
	Lower ring nut (initial tightening torque) **38 Nm (3.8 m•kg)**

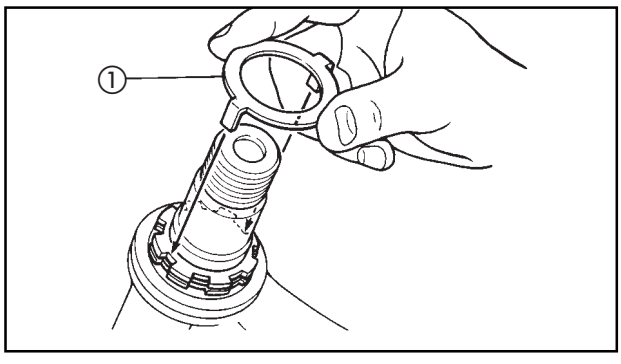
c. Loosen the lower ring nut ④ completely and then tighten it to specification with a ring nut wrench .

⚠ WARNING
Do not overtighten the lower ring nut.

	Lower ring nut (final tightening torque) **22 Nm (2.2 m•kg)**

d. Check the steering head for looseness or binding by turning the front fork all the way in both directions. If any binding is felt, remove the lower bracket and check the upper and lower bearings.
Refer to “STEERING HEAD” section in chapter 7.
e. Install the rubber washer.
f. Install the centre ring nut ②.
g. Finger tighten the centre ring nut, then align the slots of both ring nuts. If necessary, hold the lower ring nut ① and tighten the centre ring nut ② until their slots are aligned.
h. Install the lock washer ①.





NOTE:
Make sure the lock washer tabs sit correctly in the ring nut slots.

i. Hold the lower and centre ring nuts with a exhaust and ring nut wrench and tighten the upper ring nut with a ring nut wrench.

	Ring nut wrench **90890-01268**
	Upper ring nut **75 Nm (7.5 m•kg)**

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

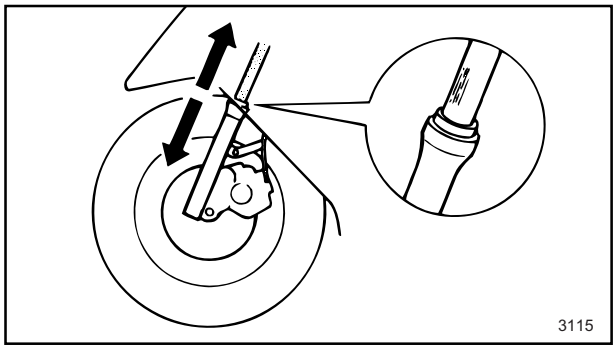
5. Install:
   - Handlebar
     Refer to "HANDLEBAR" section in chapter 7.
   - Handlebar cover
     Refer to "HANDLEBAR COVERS" section.

EAS00151
CHECKING THE FRONT FORK

1. Stand the scooter on a level surface.

⚠ WARNING

Securely support the scooter so that there is no danger of it falling over.



2. Check:
   - inner tube
     Damage/scratches → Replace.
   - oil seal
     Oil leakage → Replace.
3. Hold the scooter upright and apply the front brake.
4. Check:
   - front fork operation
     Push down hard on the handlebar several times and check if the front fork rebounds smoothly.
     Rough movement → Repair.
     Refer to "FRONT FORK" section in chapter 7.

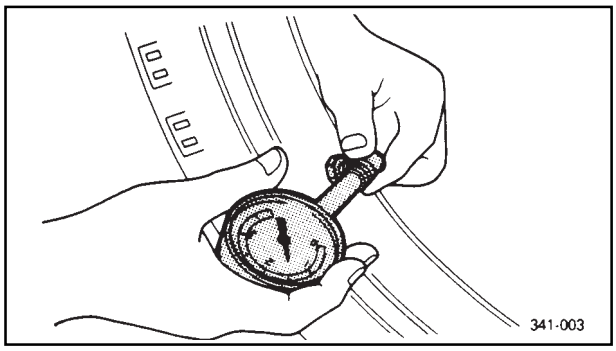
EASM0018
INSPECTING THE REAR SHOCK ABSORBER

1. Remove:
   • Side covers
   Refer to “SIDE COVERS AND SEAT” section.
2. Check
   • Rear shock absorber mount
   Looseness → Tighten.
   Bolt (upper) 31.5 Nm (3.15m•kg)
   Bolt (lower) 17.5 Nm (1.75m•kg)
   Refer to “REAR SHOCK ABSORBER AND EXHAUST PIPE” section in chapter 7.

EAS00167
CHECKING THE TYRES

The following procedure applies to both of the tyres.

1. Measure:
   • tyre pressure
   Out of specification → Regulate.

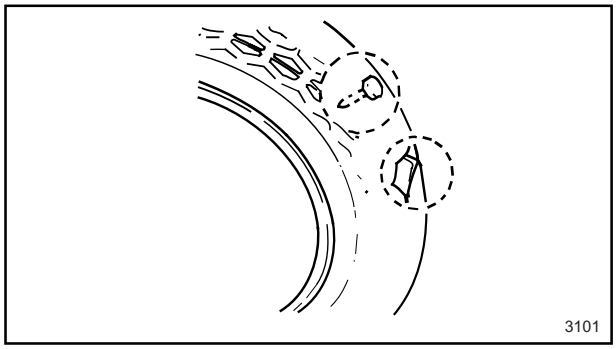


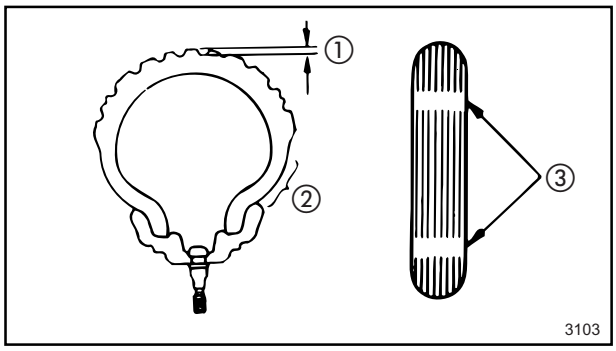
⚠ WARNING

- **The tyre pressure should only be checked and regulated when the tyre temperature equals the ambient air temperature.**
- **The tyre pressure and the suspension must be adjusted according to the total weight (including cargo, rider, passenger and accessories) and the anticipated riding speed.**
- **Operation of an overloaded scooter could cause tyre damage, an accident or an injury.**
- **NEVER OVERLOAD THE SCOOTER.**

Basic weight (with oil and a full fuel tank)	**123 kg**	
Maximum load*	**187 kg**	
Cold tyre pressure	**Front**	**Rear**
Up to 90 kg load*	**180 kPa (1.8 kgf/cm²)**	**200 kPa (2.0 kgf/cm²)**
90 kg ~ maximum load*	**200 kPa (2.0 kgf/cm²)**	**220 kPa (2.2 kgf/cm²)**
High-speed riding	**200 kPa (2.0 kgf/cm²)**	**220 kPa (2.2 kgf/cm²)**

* total of cargo, rider, passenger and accessories (execpt the motorcycle)





⚠ WARNING

It is dangerous to ride with a worn-out tyre. When the tyre tread reaches the wear limit, replace the tyre immediately.

2. Check:
   • tyre surfaces
   Damage/wear → Replace the tyre.

Minimum tyre tread depth
0.8 mm

① Tyre tread depth
② Side wall
③ Wear indicator

⚠ WARNING

- **Do not use a tubeless tyre on a wheel designed only for tube tyres to avoid tyre failure and personal injury from sudden deflation.**
- **When using tube tyres, be sure to install the correct tube.**
- **Always replace a new tube tyre and a new tube as a set.**
- **To avoid pinching the tube, make sure the wheel rim band and tube are centered in the wheel groove.**
- **Patching a punctured tube is not recommended. If it is absolutely necessary to do so, use great care and replace the tube as soon as possible with a good quality replacement.**

Tube wheel → Tube tyre only
Tubeless wheel → Tube or tubeless tyre

- **After extensive tests, the tyres listed below have been approved by MBK Industrie for this model. The front and rear tyres should always be by the same manufacturer and of the same design. No guarantee concerning handling characteristics can be given if a tyre combination other than one approved by MBK Industrie is used on this scooter.**

Front tyre

Manufacturer	METZELER
Model	ME-7 TEEN
Size	120/70-12

Rear tyre

Manufacturer	METZELER
Model	ME-7 TEEN
Size	120/70-12

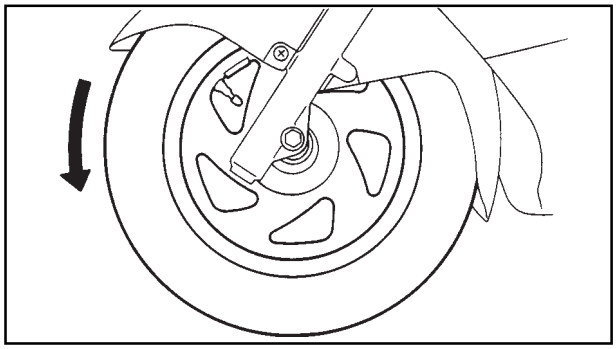
⚠ WARNING

- **New tyres have a relatively low grip on the road surface until they have been slightly worn. Therefore, approximately 100 km should be traveled at normal speed before any high-speed riding is done.**
- **After a tyre has been repaired or replaced, be sure to tighten the tyre air valve stem locknut to specification.**

NOTE:

For tyres with a direction of rotation mark:

- Install the tyre with the mark pointing in the direction of wheel rotation.
- Align the mark with the valve installation point.



EAS00168
CHECKING THE WHEELS

The following procedure applies to both of the wheels.

1. Check:
   • wheel
   Damage/out-of-round → Replace.

⚠ WARNING

Never attempt to make any repairs to the wheel.

NOTE:

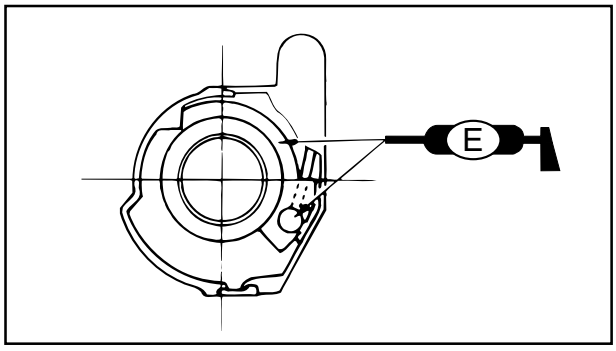
After a tyre or wheel has been changed or replaced, always balance the wheel.

EAS00170
CHECKING AND LUBRICATING THE CABLES

The following procedure applies to all of the cable sheaths and cables.

⚠ WARNING

Damaged cable sheaths may cause the cable to corrode and interfere with its movement. Replace damaged cable sheaths and cables as soon as possible.

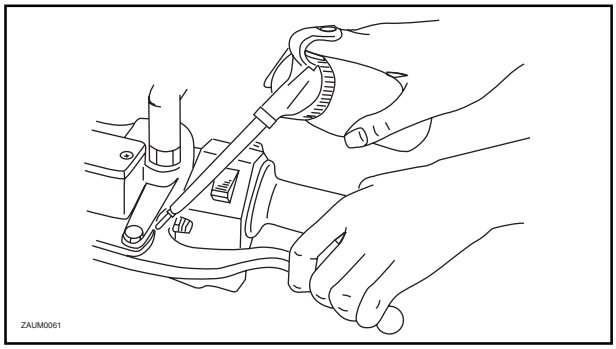


1. Check:
   • cable sheath
   Damage → Replace.
2. Check:
   • cable operation
   Rough movement → Lubricate.

Recommended lubricant
Engine oil or a suitable cable lubricant

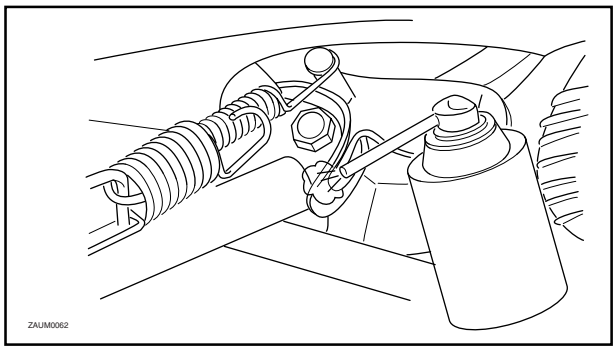
NOTE:

Hold the cable end upright and pour a few drops of lubricant into the cable sheath or use a suitable lubricating device.



EAS00171
LUBRICATING THE LEVERS AND PEDALS
Lubricate the pivoting point and metal-to-metal moving parts of the levers and pedals.

	Recommended lubricant **Engine oil**



EAS00172
LUBRICATING THE CENTERSTAND
Lubricate the pivoting point and metal-to-metal moving parts of the centerstand.

	Recommended lubricant **Engine oil**

EAS00177
ELECTRICAL SYSTEM
CHECKING THE BATTERY

⚠ WARNING

Batteries generate explosive hydrogen gas and contain electrolyte which is made of poisonous and highly caustic sulphuric acid. Therefore, always follow these preventive measures:

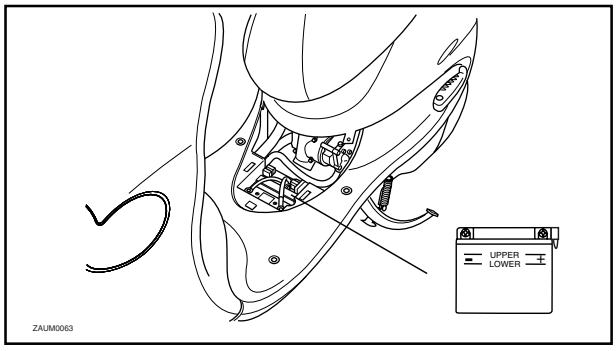
- **Wear protective eye gear when handling or working near batteries.**
- **Charge batteries in a well-ventilated area.**
- **Keep batteries away from fire, sparks or open flames (e.g., welding equipment, lighted cigarettes).**
- **DO NOT SMOKE when charging or handling batteries.**
- **KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.**
- **Avoid bodily contact with electrolyte as it can cause severe burns or permanent eye injury.**

FIRST AID IN CASE OF BODILY CONTACT:
EXTERNAL

- **Skin - Wash with water.**
- **Eyes - Flush with water for 15 minutes and get immediate medical attention.**

INTERNAL

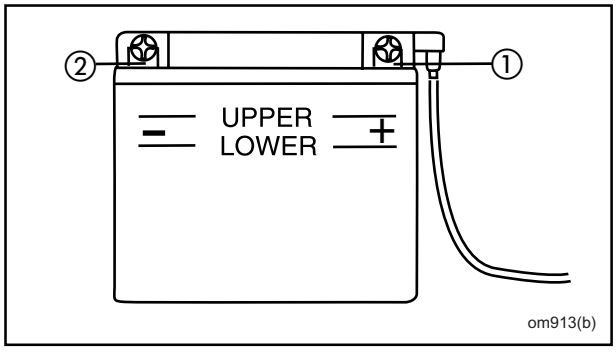
- **Drink large quantities of water or milk followed with milk of magnesia, beaten egg or vegetable oil. Get immediate medical attention.**



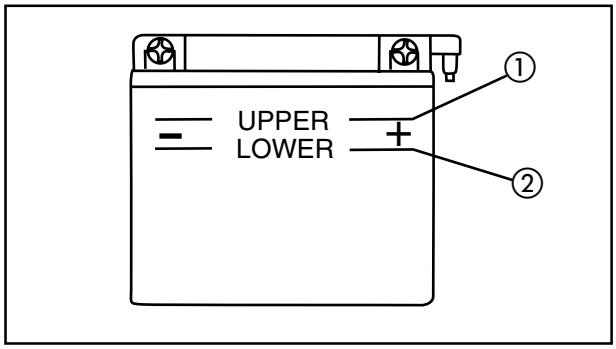
1. Remove:
   - Battery cover
     Refer to “SIDE COVERS AND SEAT” section.
2. Disconnect:
   - battery leads
     (from the battery terminals)

CAUTION:

First, disconnect the negative battery lead ②, and the positive battery lead ①.



3. Remove:
   - battery



4. Check:
   • electrolyte level
   The electrolyte level should be between the minimum level mark ② and the maximum level mark ①.
   Below the minimum level mark → Add distilled water to the proper level.

CAUTION:

Add only distilled water. Tap water contains minerals which are harmful to the battery.

5. Check:
   • specific gravity
   Less than 1.280 → Recharge the battery.

Specific gravity
1.280 at 20°C

6. Charge:
   • battery

⚠ WARNING

Do not quick charge a battery.

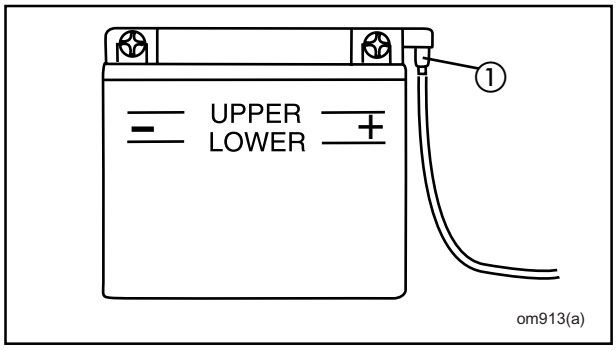
CAUTION:

- **Loosen the battery sealing caps.**
- **Make sure the battery breather hose and battery vent are free of obstructions.**
- **To ensure maximum performance, always charge a new battery before using it.**
- **Do not use a high-rate battery charger. They force a high-amperage current into the battery quickly and can cause battery overheating and battery plate damage.**
- **If it is impossible to regulate the charging current on the battery charger, be careful not to overcharge the battery.**
- **When charging a battery, be sure to remove it from the scooter. (If charging has to be done with the battery mounted on the scooter, disconnect the negative battery lead from the battery terminal.)**
- **To reduce the chance of sparks, do not plug in the battery charger until the battery charger leads are connected to the battery.**
- **Before removing the battery charger lead clips from the battery terminals, be sure to turn off the battery charger.**

- **Make sure the battery charger lead clips are in full contact with the battery terminal and that they are not shorted. A corroded battery charger lead clip may generate heat in the contact area and a weak clip spring may cause sparks.**
- **If the battery becomes hot to the touch at any time during the charging process, disconnect the battery charger and let the battery cool before reconnecting it. Hot batteries can explode!**

NOTE:

Replace the battery whenever:
- battery voltage does not rise to specification or bubbles fail to rise during charging,
- sulphation of one or more battery cells occurs (as indicated by the battery plates turning white or material accumulating in the bottom of the battery cell),
- specific gravity readings after a long, slow charge indicate that one battery cell's charge is lower than the rest,
- warpage or buckling of the battery plates or insulators is evident.

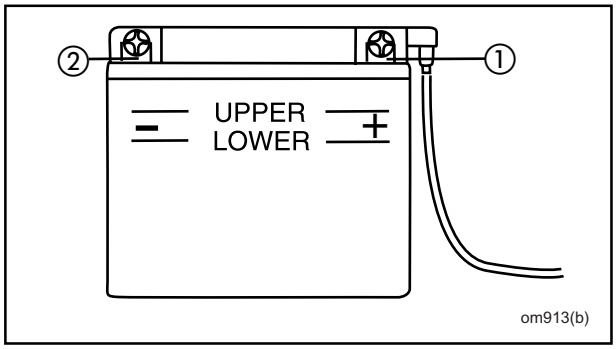


7. Check:
   - battery breather hose and battery vent
     Obstruction → Clean.
     Damage → Replace.
8. Install:
   - battery
9. Connect:
   - battery breather hose ①

CAUTION:

When checking the battery, make sure the battery breather hose is properly installed and routed correctly. If the battery breather hose is positioned so as to allow electrolyte or hydrogen gas from the battery to contact the frame, the scooter and its finish may be damaged.

10. Check:
    - battery terminals
      Dirt Clean with a wire brush.
      Loose connection Connect properly.



11. Connect:
    • battery leads
      (to the battery terminals)

CAUTION:

First, connect the positive battery lead ①, and then the negative battery lead ②.

12. Lubricate:
    • battery terminals

	Recommended lubricant **Dielectric grease**

13. Install:
    • Battery cover
      Refer to "SIDE COVERS AND SEAT" section.

EAS00181
CHECKING THE FUSES

The following procedure applies to all of the fuses.

CAUTION:

To avoid a short circuit, always set the main switch to "OFF" when checking or replacing a fuse.

1. Remove:
    • Battery cover
      Refer to "SIDE COVERS AND SEAT" section.
2. Check:
    • continuity

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Connect the pocket tester to the fuse and check the continuity.

NOTE:

Set the pocket tester selector to "Ω x 1".

	Pocket tester **90890-03112**

b. If the pocket tester indicates "∞", replace the fuse.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

3. Replace:
   • blown fuse

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Set the main switch to "OFF".
b. Install a new fuse of the correct amperage.
c. Set on the switches to verify if the electrical circuit is operational.
d. If the fuse immediately blows again, check the electrical circuit.

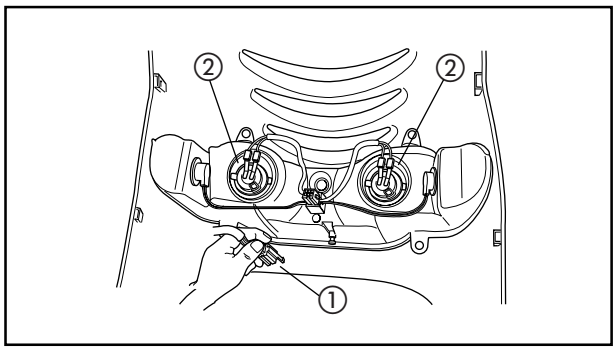
▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

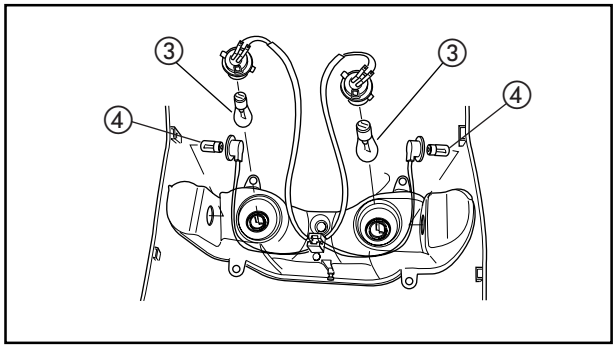
Items	Amperage	Q'ty
Main fuse	20A	1
Fan fuse	7.5A	1

⚠ WARNING

Never use a fuse with an amperage rating other than that specified. Improvising or using a fuse with the wrong amperage rating may cause extensive damage to the electrical system, cause the lighting and ignition systems to malfunction and could possibly cause a fire.

4. Install:
   • Battery cover
   Refer to "SIDE COVERS AND SEAT" section.





EAS00183

REPLACING THE HEADLIGHT BULBS AND THE FRONT TURN SIGNAL LIGHT BULBS.

The following procedure applies to both of the headlight bulbs.

1. Remove:
   • Front cover
   Refer to "FRONT COVER, INNER PANEL AND FRONT INNER PANEL" section.
2. Disconnect:
   • Healight coupler ①
3. Detach:
   • Headlight bulb holder ②
4. Remove:
   • Headlight bulb ③
   • Turn signal light bulbs ④

⚠ WARNING

Since the headlight bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.

5. Install:
   • headlight bulb New
   Secure the new headlight bulb with the headlight bulb holder.

CAUTION:

Avoid touching the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb, and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.

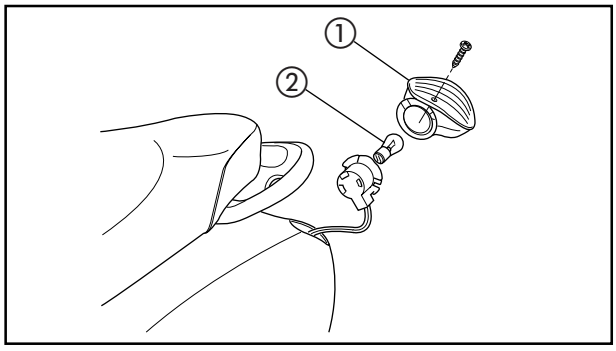
6. Attach:
   • headlight bulb holder
7. Connect:
   • Headlight coupler
8. Install:
   • Front cover
   Refer to "FRONT COVER, INNER PANEL AND FRONT INNER PANEL" section.

EAS00183

REPLACING THE REAR TURN SIGNAL LIGHT BULBS

The following procedure applies to both of the turn signal light bulbs.

1. Remove:
   • Turn signal light lens ①
2. Remove:
   • Turn signal bulb ② (push and turn it counterclockwise)



⚠ WARNING

Since the turn signal light bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.

3. Install:
   • Turn signal light bulb New (push and turn it clockwise until it stops)

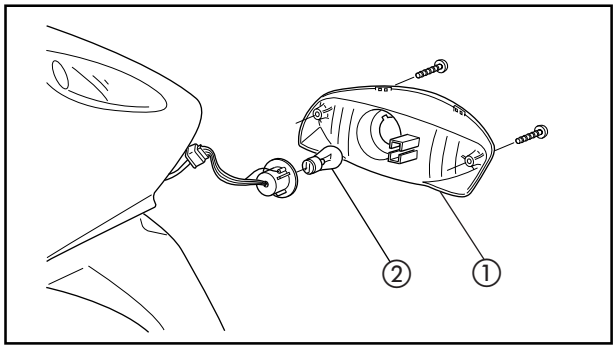
CAUTION:

Avoid touching the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb, and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.

CAUTION:

Do not overtighten the screw, otherwise the lensmay break.

4. Install:
   • Turn signal light lens



EAS00183

REPLACING THE TAIL/BRAKE LIGHT BULB

1. Remove:
   • Tail/brake light lens ①
2. Remove:
   • Tail/brake bulb ② (push and turn it counterclockwise)

⚠ WARNING

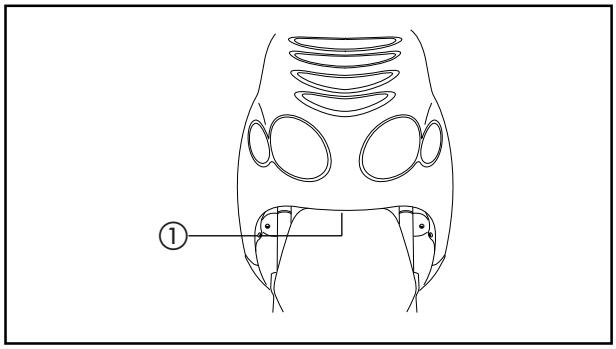
Since the tail/brake bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.

3. Install:
   • Tail/brake light bulb New (push and turn it clockwise until it stops)

CAUTION:

Avoid touching the glass part of the tail/brake bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb, and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.

4. Install:
   • Tail/brake light lens



EAS00185
ADJUSTING THE HEADLIGHT BEAMS

The following procedure applies to both of the headlights.

1. Adjust:
   • headlight beam (vertically)

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

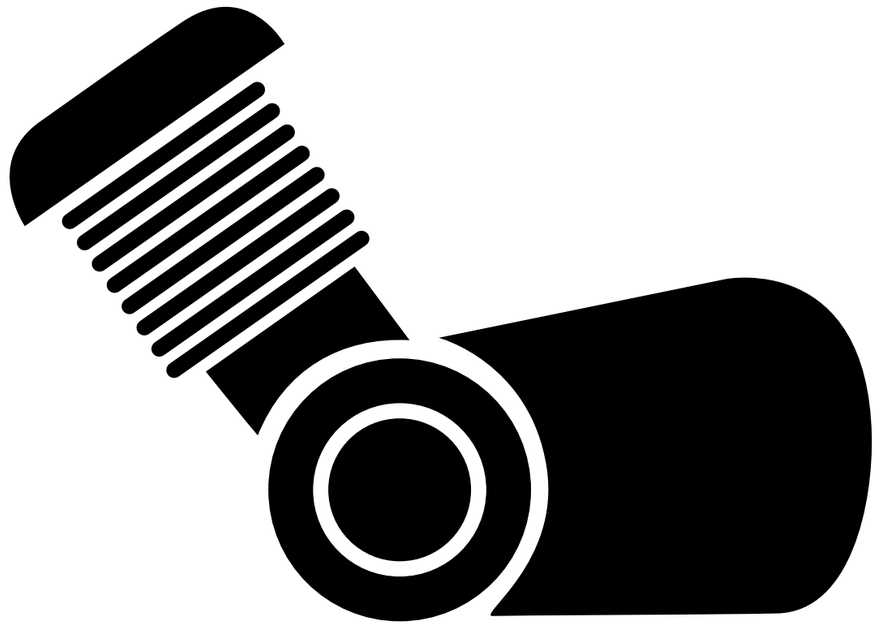
a. Turn the adjusting screw ① in or out.

Turning in	**→ Headlight beam is raised.**
Turning out	**→ Headlight beam is lowered.**

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

EASM0019
ADJUSTING THE DIGITAL CLOCK

To adjuste the digital clock, refer to “FEATURES” section in chapter 1.



ENG

4

CHAPTER 4.
OVERHAULING THE ENGINE

ENGINE 4-1
WIRING HARNESS, CABLE 4-1
HOSES, AIR FILTER, ENGINE MOUNTING BOLT AND ENGINE 4-3

CAMSHAFT 4-4
REMOVING THE ROCKER ARMS AND THE CAMSHAFT 4-5
CHECKING THE CAMSHAFT 4-5
CHECKING THE ROCKER ARMS AND ROCKER ARM SHAFTS 4-6
CHECKING THE TIMING CHAIN, CAMSHAFT SPROCKET AND TIMING CHAIN GUIDES 4-7
CHECKING THE TIMING CHAIN TENSIONER 4-7
CHECKING THE TAPPET COVERS AND CAMSHAFT SPROCKET COVER 4-8
INSTALLING THE CAMSHAFT AND ROCKER ARMS 4-8

CYLINDER HEAD 4-10
REMOVING THE CYLINDER HEAD 4-12
CHECKING THE CYLINDER HEAD 4-12
INSTALLING THE CYLINDER HEAD 4-13

VALVES AND VALVE SPRINGS 4-14
REMOVING THE VALVES 4-15
CHECKING THE VALVES AND VALVE GUIDES 4-16
CHECKING THE VALVE SEATS 4-17
CHECKING THE VALVE SPRINGS 4-19
INSTALLING THE VALVES 4-20

CYLINDER AND PISTON 4-22
REMOVING THE CYLINDER AND PISTON 4-23
CHECKING THE CYLINDER AND PISTON 4-23
CHECKING THE PISTON RINGS 4-25
CHECKING THE PISTON PIN 4-26
INSTALLING THE PISTON AND CYLINDER 4-26

CLUTCH 4-28
CRANKCASE COVER 4-28
V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE 4-29
SECONDARY SHEAVE 4-30
REMOVING THE PRIMARY SHEAVE 4-31
REMOVING THE SECONDARY SHEAVE AND V-BELT 4-31
DISASSEMBLING THE SECONDARY SHEAVE 4-32
CHECKING THE CLUTCH 4-32
CHECKING THE CLUTCH HOUSING 4-33
CHECKING THE CLUTCH SPRINGS 4-33
CHECKING THE V-BELT 4-33
CHECKING THE WEIGHTS 4-33
CHECKING THE SECONDARY SHEAVE 4-34
ASSEMBLING THE PRIMARY SHEAVE 4-34
INSTALLING THE SECONDARY SHEAVE 4-35

STARTER CLUTCH AND GENERATOR 4-37
MAGNETO COVER AND STATOR COIL 4-37
STARTER CLUTH 4-38
CHECKING THE STARTER CLUTCH 4-39
INSTALLING THE GENERATOR 4-39

OIL PUMP 4-40
CHECKING THE OIL PUMP 4-41

CRANKCASE AND CRANKSHAFT 4-42
DISASSEMBLING THE CRANKCASE 4-44
REMOVING THE CRANKSHAFT ASSEMBLY 4-44
CHECKING THE CRANKSHAFT AND CONNECTING ROD 4-45
CHECKING THE CRANKCASE 4-46
CHECKING THE BEARINGS AND OIL SEALS 4-46
CHECKING THE CIRCLIPS AND WASHERS 4-46
INSTALLING THE CRANKSHAFT 4-46
ASSEMBLING THE CRANKCASE 4-47

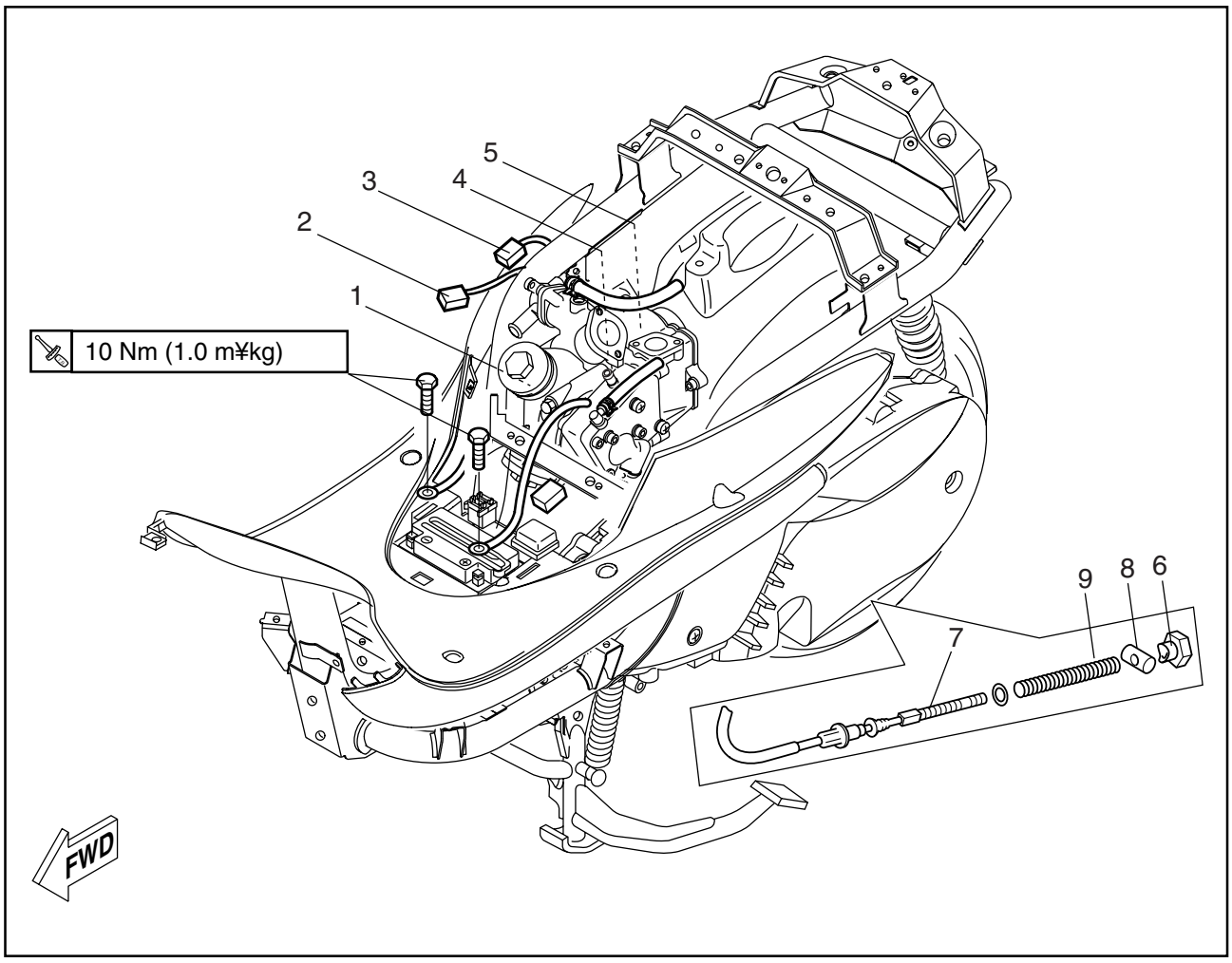
TRANSMISSION 4-48

EASM0020 (bis)

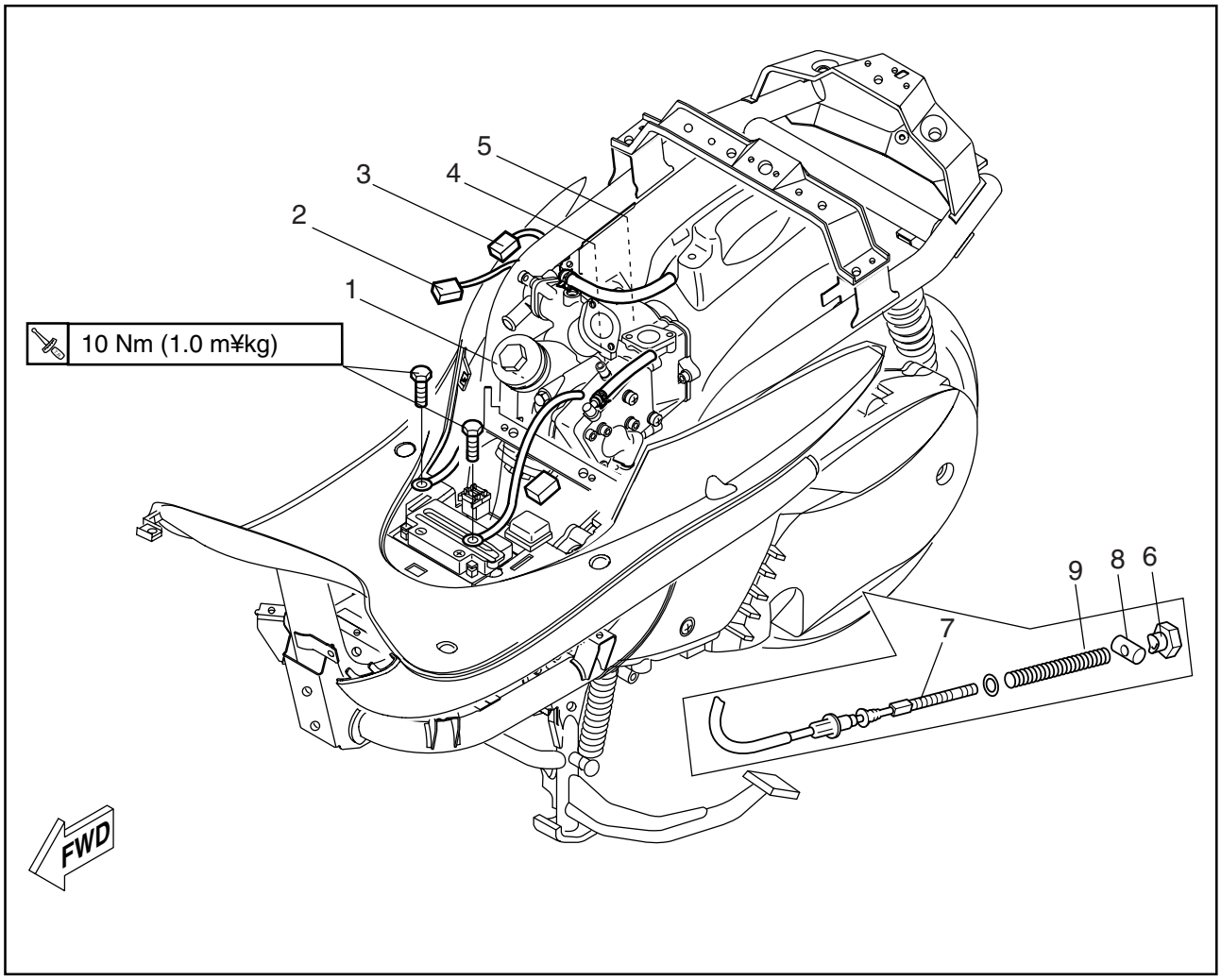
OVERHAULING THE ENGINE

ENGINE

WIRING HARNESS, CABLE

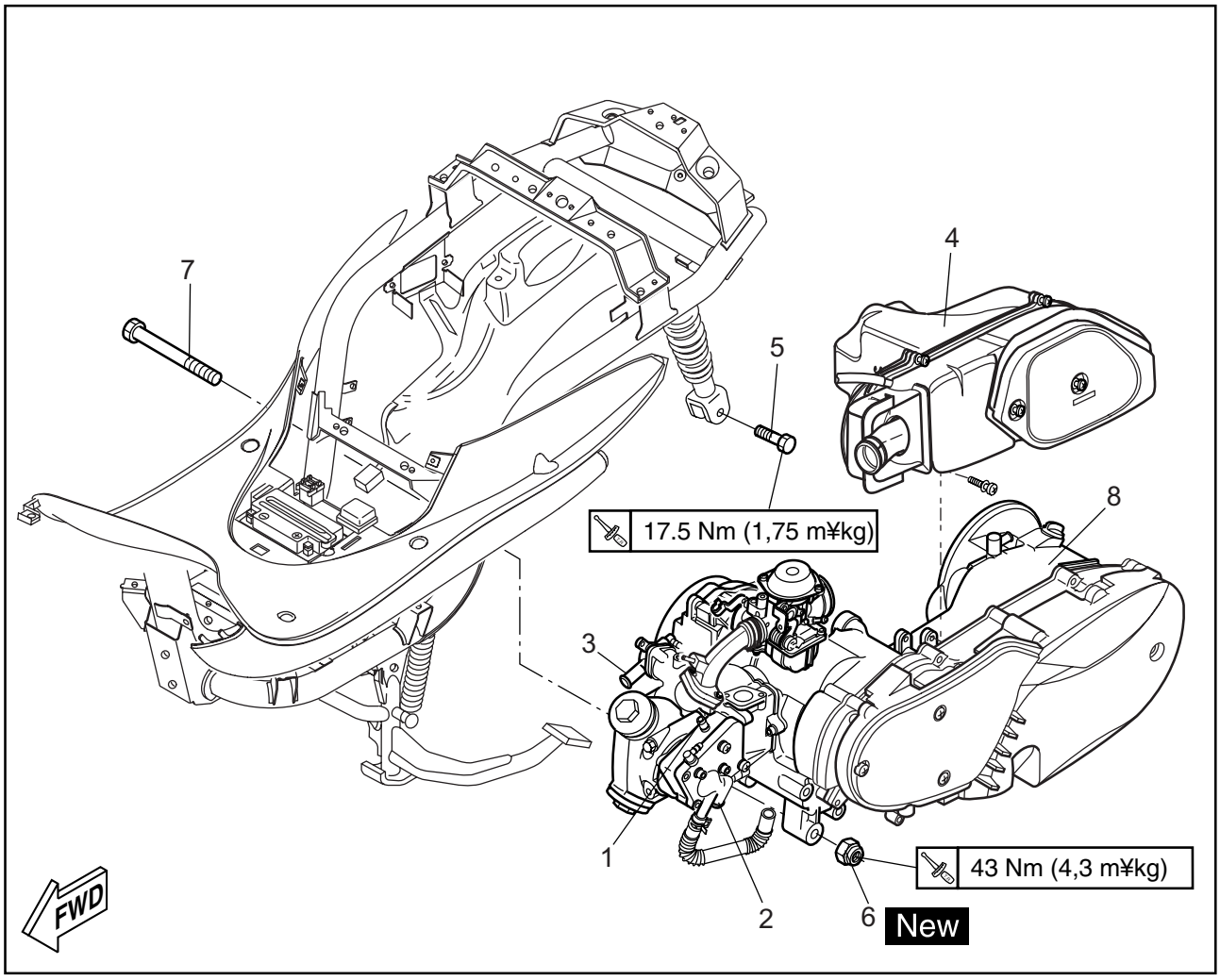


Order	Job/Part	Q'ty	Remarks
	Removing the wire harness and cables		Remove the parts in the order listed.
	Side covers Seat Box		Refer to "SIDE COVERS AND SEAT" section in chapter 3.
	Footrest board Under cover		Refer to "FOOTREST BOARD, AND UNDER COVER" section in chapter 3.
	Carburetor		Refer to "CARBURETOR" section in chapter 6.
	Drain coolant		Refer to "CHANGING THE COOLANT" section in chapter 3.
I	Remove:		
1	Spark plug cap	1	
2	Thermo unit lead	1	
3	Startor coil/Pick up coil lead	1/1	
4	Starting motor lead	1	



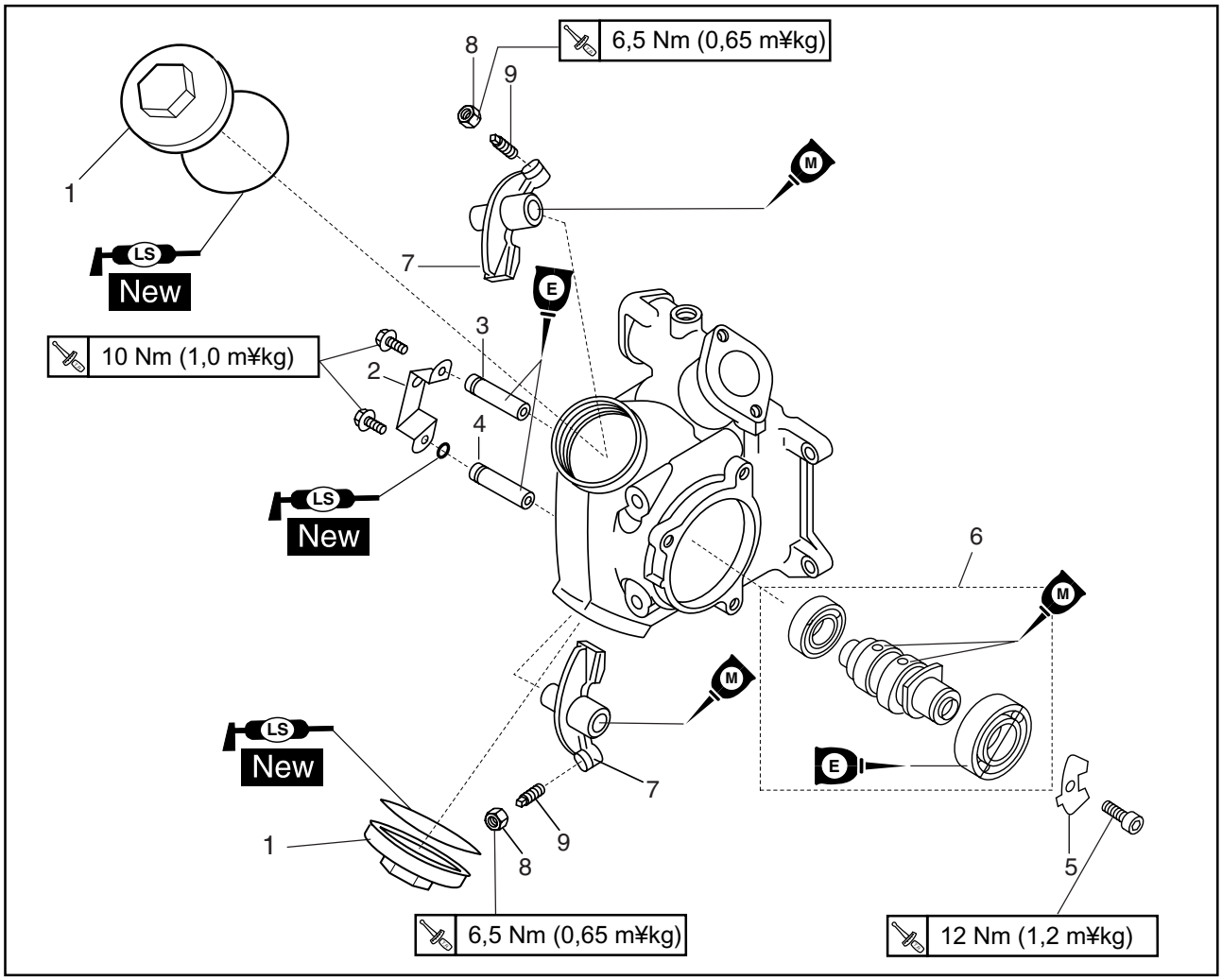
Order	Job/Part	Q'ty	Remarks
5	Earth lead	1	
6	Adjuster	1	
7	Rear brake cable	1	
8	Rear brake cable pin	1	
9	Rear brake cable compression spring	1	
10	Cable holder	1	
			For installation, reverse the removal procedure.

EASM0021
HOSES, AIR FILTER, ENGINE MOUNTING BOLT AND ENGINE

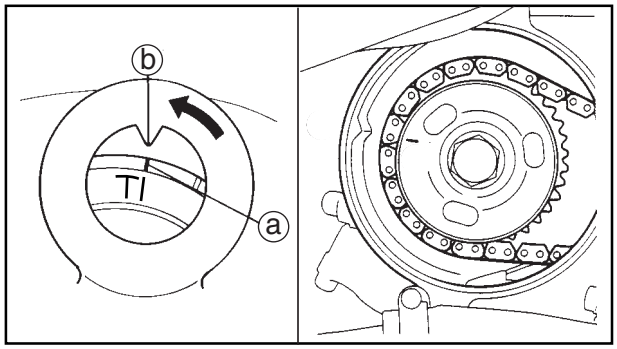


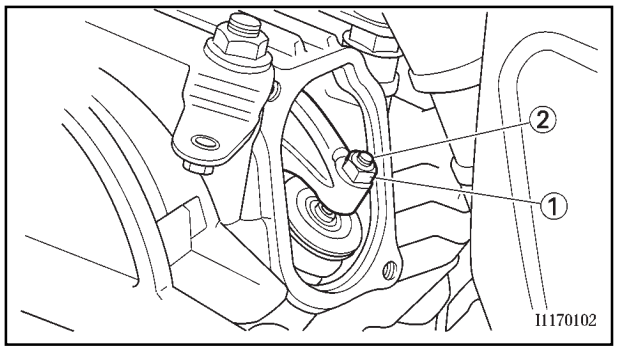
Order	Job/Part	Q'ty	Remarks
	Removing the hoses, air filter, engine mounting bolt and engine		Remove the parts in the order listed.
1	Crankcase breather hose	1	
2	Pump inlet hose	1	
3	Cylinder head outlet hose	1	
4	Air filter case assembly	1	
5	Rear shock absorber bolt (lower)	1	
6	Self locknut/ Plane washer	1/1	**CAUTION:**
7	Engine mounting bolt	1	**Place the scooter on a suitable stand so that teh rear wheel is elevated.**
8	Engine	1	
			For installation, reverse the removal procedure.

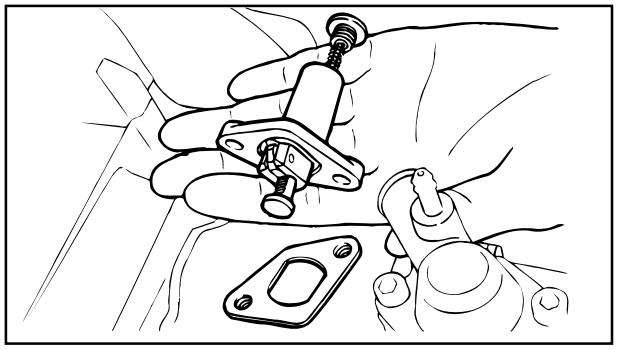
EASM0023
CAMSHAFT

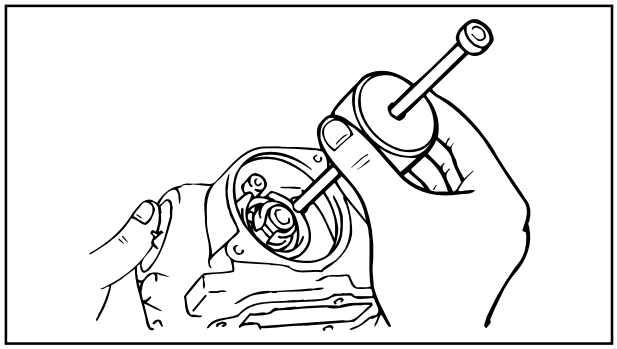


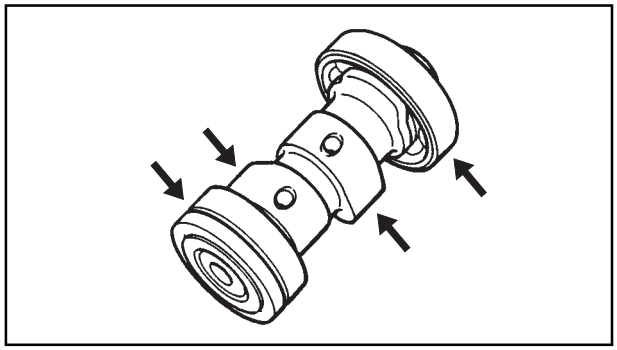
Order	Job/Part	Q'ty	Remarks
	Removing the camshaft		Remove the parts in the order listed.
	Cylinder head		Refer to "CYLINDER HEAD" section.
1	Plate bolt	2	
2	Plate	1	
3	Rocker arm shaft (intake)	1	Slide hammer bolt: 90890-01083 Weight: 90890-01084
4	Rocker arm shaft (exhaust)	1	
5	Camshaft retaining plate	1	
6	Camshaft	1	
7	Rocker arms (intake and exhaust)	2	
8	Locknut	2	
9	Adjuster	2	
			For installation, reverse the removal procedure.











EAS00197
REMOVING THE ROCKER ARMS AND CAMSHAFT

1. Align:
   - "T" mark on the generator rotor (with the mark on the generator rotor cover)

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Turn the crankshaft counterclockwise.
b. When the piston is at TDC on the compression stroke, align the "T" mark ⓐ on the generator rotor with the mark ⓑ on the crankcase.

NOTE:

TDC on the compression stroke can be found when the camshaft lobes are turned away from each other.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

2. Loosen:
   - locknuts ①
   - adjusting screws ②
3. Remove:
   - timing chain tensioner assembly

NOTE:

Remove the timing chain tensioner adjusting screw and spring to release the spring tension and then remove the timing chain tensioner body.

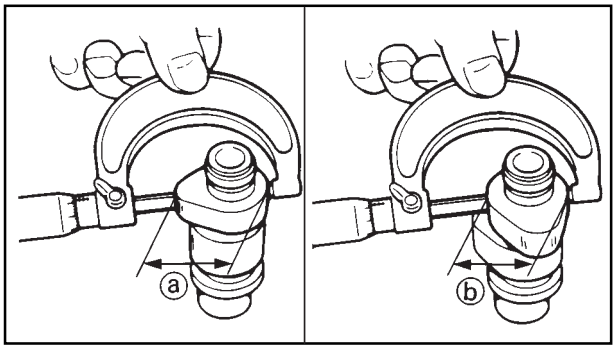
4. Remove:
   - bolt
   - camshaft sprocket
   - Rocker arms shaft
5. Remove:
   - camshaft retaining plate and bolt
   - camshaft

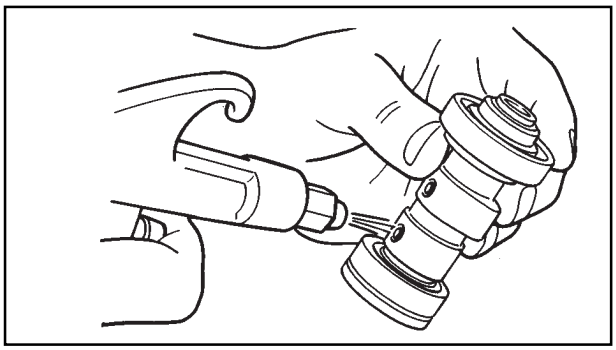
Slide hammer bolt
90890-01083 (M6)
Weight
90890-01084

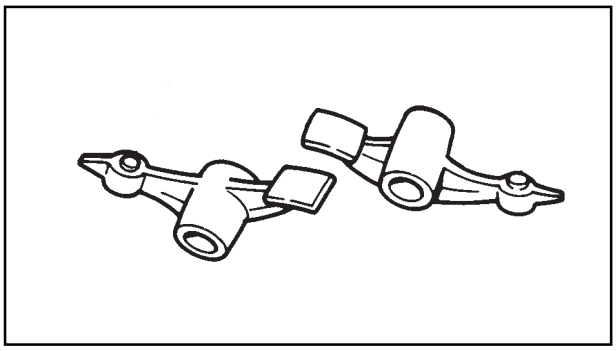
6. Remove:
   - rocker arms

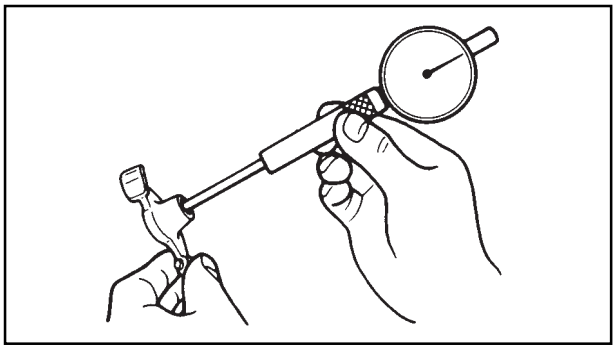
EAS00205
CHECKING THE CAMSHAFT

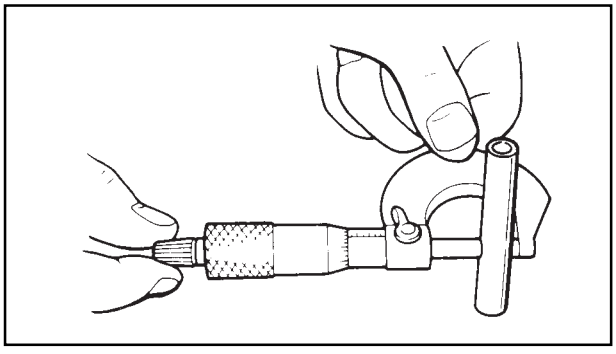
1. Check:
   - camshaft bearings
     Damage/wear → Replace.
2. Check:
   - camshaft lobes
     Blue discoloration/pitting/scratches → Replace the camshaft.











3. Measure:
   • camshaft lobe dimensions ⓐ and ⓑ.
   Out of specification → Replace the camshaft.

Camshaft lobe dimension limit
Intake
ⓐ 30.711mm
ⓑ 25.045 mm
Exhaust
ⓐ 30.711 mm
ⓑ 25.052 mm

4. Check:
   • camshaft oil passage
   Obstruction → Blow out with compressed air.

EAS00206
CHECKING THE ROCKER ARMS AND ROCKER ARM SHAFTS

The following procedure applies to all of the rocker arms and rocker arm shafts.

1. Check:
   • rocker arm
   Damage/wear → Replace.
2. Check:
   • rocker arm shaft
   Blue discoloration/excessive wear/pitting/scratches → Replace or check the lubrication system.
3. Check:
   • camshaft lobe
   Excessive wear → Replace the camshaft.
4. Measure:
   • rocker arm inside diameter
   Out of specification → Replace.

Rocker arm inside diameter
12.000 ~ 12.018 mm
<Limit>:12.030mm

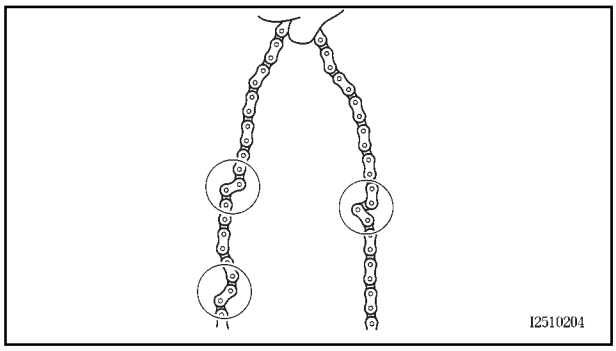
5. Measure:
   • rocker arm shaft outside diameter
   Out of specification → Replace.

Rocker arm shaft outside diameter
11.981 ~ 11.991 mm
<Limit>:11.950 mm

6. Calculate:
   • rocker-arm-to-rocker-arm-shaft clearance

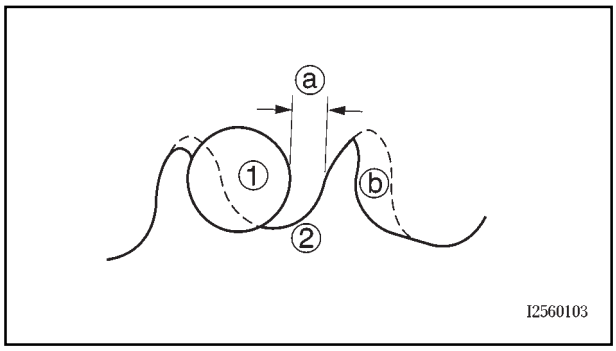
NOTE:
Calculate the clearance by subtracting the rocker arm shaft outside diameter from the rocker arm inside diameter.

Rocker-arm-to-rocker-arm-shaft clearance
0.009 ~ 0.037 mm



EAS00207
CHECKING THE TIMING CHAIN, CAMSHAFT SPROCKET AND TIMING CHAIN GUIDES

1. Check:
   • timing chain
   Damage/stiffness → Replace the timing chain and camshaft sprocket as a set.
2. Check:
   • camshaft sprocket
   More than 1/4 tooth ⓐ wear → Replace the camshaft sprocket and the timing chain as a set.

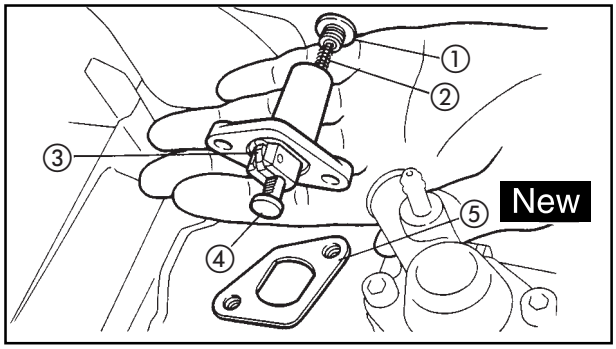


ⓐ 1/4 tooth
ⓑ Correct
① Timing chain roller
② Camshaft sprocket

3. Check:
   • timing chain guide (exhaust side)
   • timing chain guide (intake side)
   Damage/wear → Replace the defective part(s).

EAS00210
CHECKING THE TIMING CHAIN TENSIONER

1. Check:
   • timing chain tensioner
   Cracks/damage → Replace.
2. Check:
   • one-way cam operation
   Rough movement → Replace the timing chain tensioner housing.
3. Check:
   • cap bolt ①
   • O-ring
   • spring ②
   • one-way cam ③
   • gasket ⑤
   • timing chain tensioner rod ④
   Damage/wear → Replace the defective part (-s).



EAS00212
CHECKING THE TAPPET COVERS AND CAMSHAFT SPROCKET COVER

The following procedure applies to both of the tappet covers and O-rings.

1. Check:
   - tappet covers
   - O-rings

   Damage/wear → Replace the defective part(s).

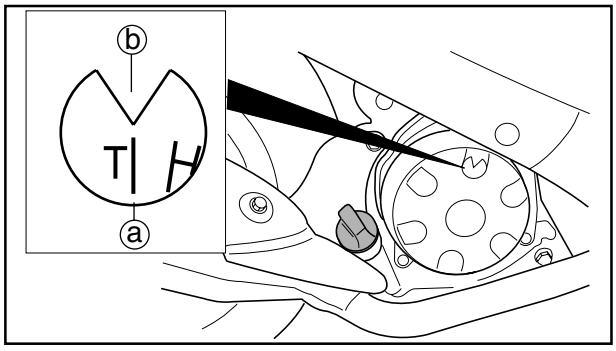
INSTALLING THE CAMSHAFT AND ROCKER ARMS

1. Lubricate:
   - rocker arms and shafts (intake and exhaust)

Recommended lubricant
Molybdenum disulfide oil

2. Install:
   - exhaust rocker arm
   - intake rocker arm
3. Lubricate:
   - camshaft

Recommended lubricant
Camshaft
Molybdenum disulfide oil
Camshaft bearing
Engine oil



4. Align:
   - "T" mark on the generator rotor (with the mark on the generator rotor cover)

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

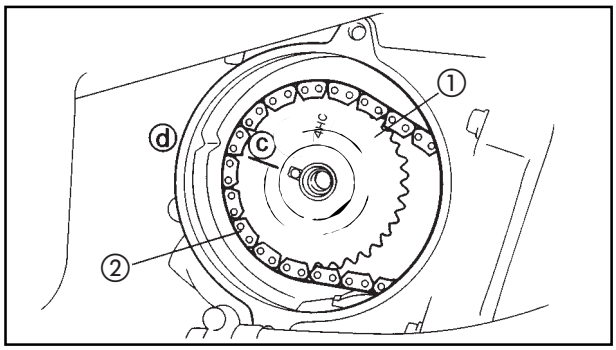
a. Turn the crankshaft counterclockwise.
b. When the piston is at TDC on the compression stroke, align the "T" mark ⓐ on the generator rotor with the mark ⓑ ont the generator rotor cover.

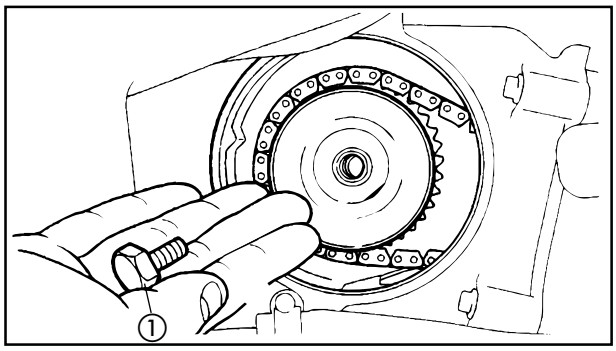
NOTE:

Be sure to keep the timing chain as tight as possible.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

5. Install:
   - camshaft
   - camshaft retaining plate
   - bolt **12Nm (1.2m•kg)**
   - O-rings (onto the intake and exhaust rocker arm shafts)
   - exhaust rocker arm shaft
   - intake rocker arm shaft





CAUTION:

Make sure the threaded part of the rocker arm shaft and O-rings faces outwards.

6. Install:
   • rocker arm shaft clamp and bolt.
   10 Nm (1.0m•kg)
7. Install:
   • timing chain ②
   (onto the camshaft sprocket)
   • camshaft sprocket ①
   (onto the camshaft)

NOTE:

• The notch on the camshaft should face towards the intake side of the engine.
• Align the camshaft mark ⓒ with the edge of the cylinder head ⓓ as shown.

CAUTION:

Do not turn the crankshaft when installing the camshaft to avoid damage or improper valve timing.

8. Install:
   • camshaft sprocket bolt ①
   30 Nm (3.0m•kg)
9. Adjust:
   • valves clearance
   Refer to "ADJUSTING THE VALVES CLEARANCE" section in chapter 3.
10. Lubricate:
    • cylinder head components

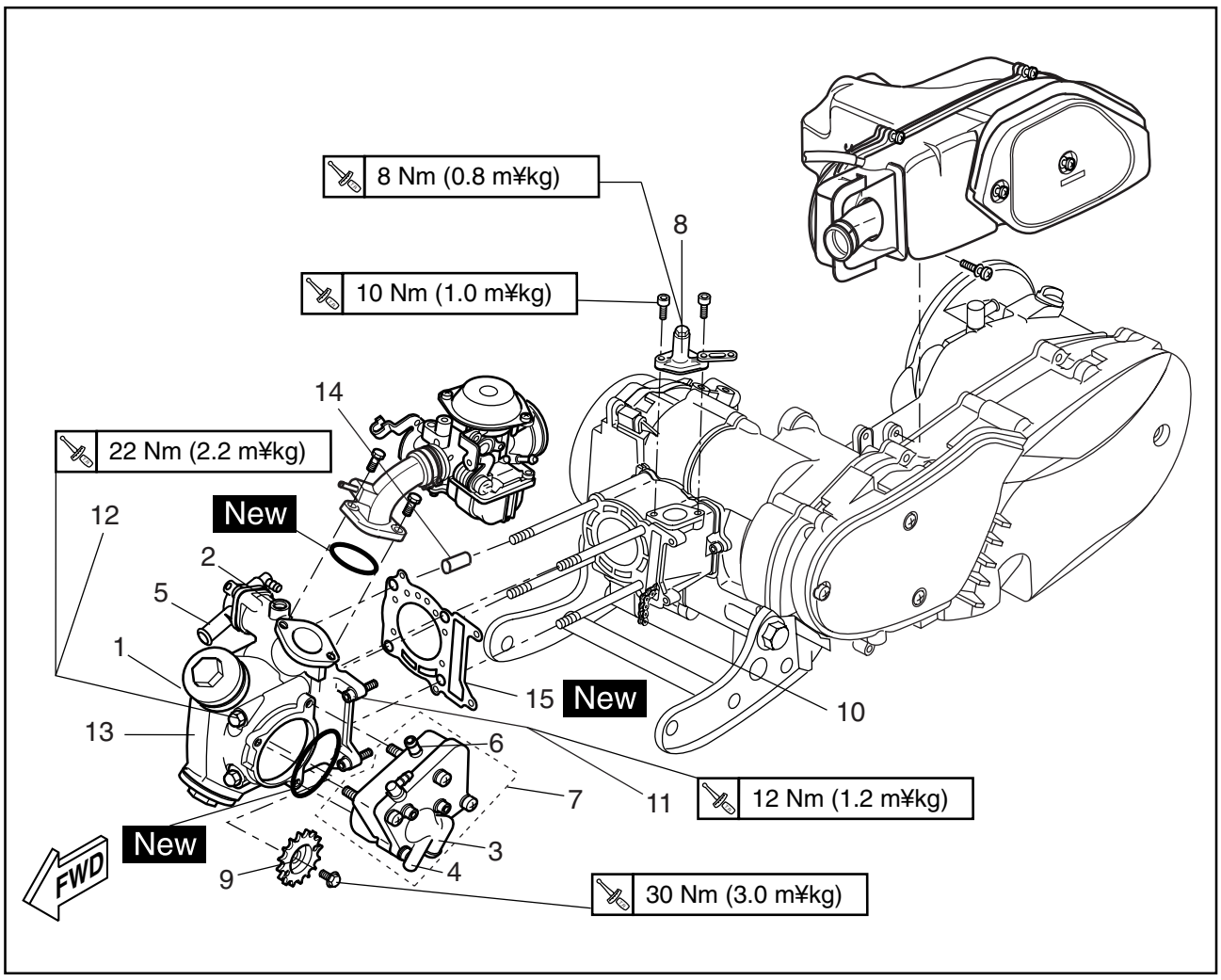
	Recommended lubricant **Engine oil**

11. Turn:
    • crankshaft

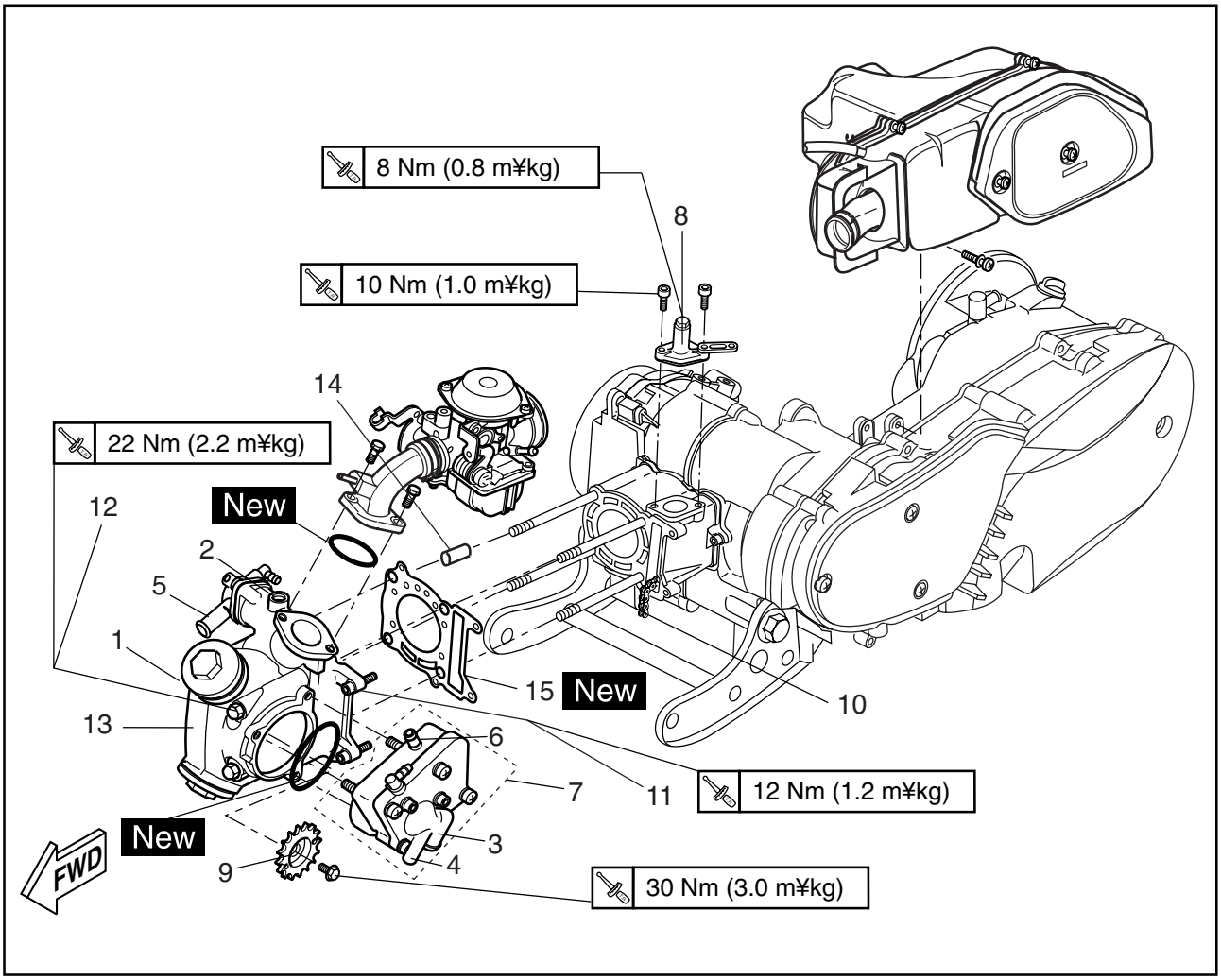
NOTE:

Turn the crankshaft several full turns to make sure the camshaft is properly timed.

EASM0020
CYLINDER HEAD



Order	Job/Part	Q'ty	Remarks
	Removing the cylinder head		Remove the parts in the order listed.
	Side covers Seat Box		Refer to "SIDE COVERS AND SEAT" section in chapter 3.
	Caburetor		Refer to "CARBURETOR" section in chapter 6.
	Exhaust pipe		Refer to "REAR SHOCKS ABSORBER AND EXHAUST PIPE" section in chapter 7.
	Drain coolant		Refer to "CHANGING THE COOLANT" section in chapter 3.
I	Remove:		
1	Spark plug cap	1	
2	Thermo switch connector	1	
3	Pump inlet hose	1	
4	Pump outlet hose	1	
5	Cylinder head outlet hose	1	

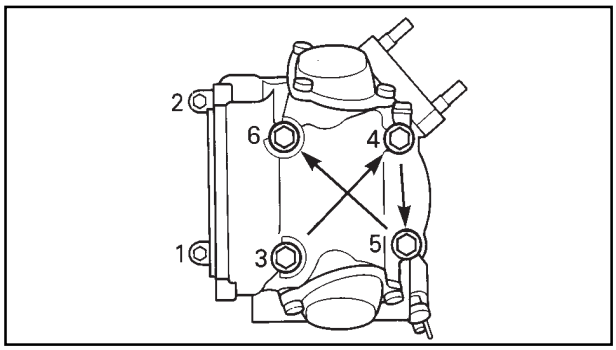


Order	Job/Part	Q'ty	Remarks
6	Crankcase breather hose	1	
7	Water pump	1	**⚠ WARNING** **Follow the arrows**
8	Timing chain tensioner	1	
9	Camshaft sprocket	1	**NOTE:** Lock the flywheel with the special tool.
10	Timing chain	1	
11	Cylinder head bolts	2	
12	Cylinder head nuts	4	
13	Cylinder head	1	
14	Dowel pin	2	**NOTE:** Avoid the dowel pin falling in the cylinder.
15	Cylinder head gasket	1	
			For installation, reverse the removal procedure.

EAS00225
REMOVING THE CYLINDER HEAD

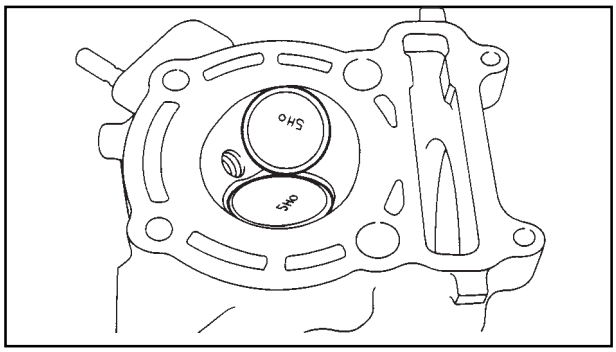
1. Remove:
   • camshaft and rocker arms
   Refer to "REMOVING THE ROCKER ARMS AND CAMSHAFT" section.

NOTE:
To prevent the timing chain from falling into the crankcase, fasten it with a wire.



2. Remove:
   • cylinder head

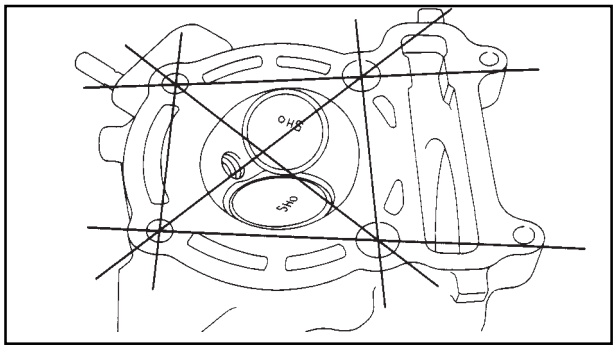
NOTE:
• Loosen the nuts in the proper sequence.
• Loosen each nut 1/2 of a turn at a time. After all of the nuts are fully loosened, remove them.



EAS00229
CHECKING THE CYLINDER HEAD

1. Remove:
   • combustion chamber carbon deposits (with a rounded scraper)

NOTE:
Do not use a sharp instrument to avoid damaging or scratching:
• spark plug bore threads
• valve seats



2. Check:
   • cylinder head
   Damage/scratches → Replace.
   • cylinder head water jacket
   Mineral deposits/rust → Remove.
3. Measure:
   • cylinder head warpage
   Out of specification → Resurface the cylinder head.

Maximum cylinder head warpage
0.03mm

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Place a straightedge and a thickness gauge across the cylinder head.
b. Measure the warpage.
c. If the limit is exceeded, resurface the cylinder head as follows.

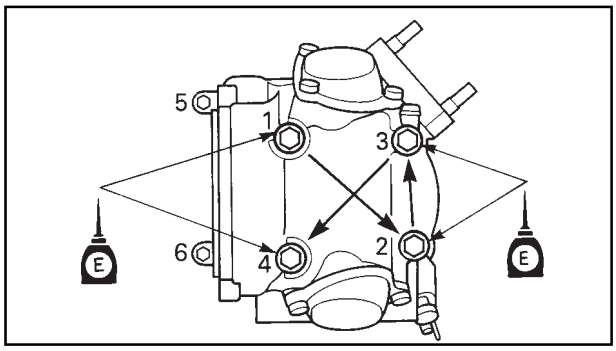
d. Place a 400 ~ 600 grit wet sandpaper on the surface plate and resurface the cylinder head using a figure-eight sanding pattern.

NOTE:
To ensure an even surface, rotate the cylinder head several times.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

EAS00232
INSTALLING THE CYLINDER HEAD

1. Install:
   - cylinder head gasket **New**
   - dowel pins
2. Install:
   - cylinder head
   - copper washers
   - cylinder head nuts **22 Nm (2.2m•kg)**
   - cylinder haed bolts **12 Nm (1.2m•kg)**

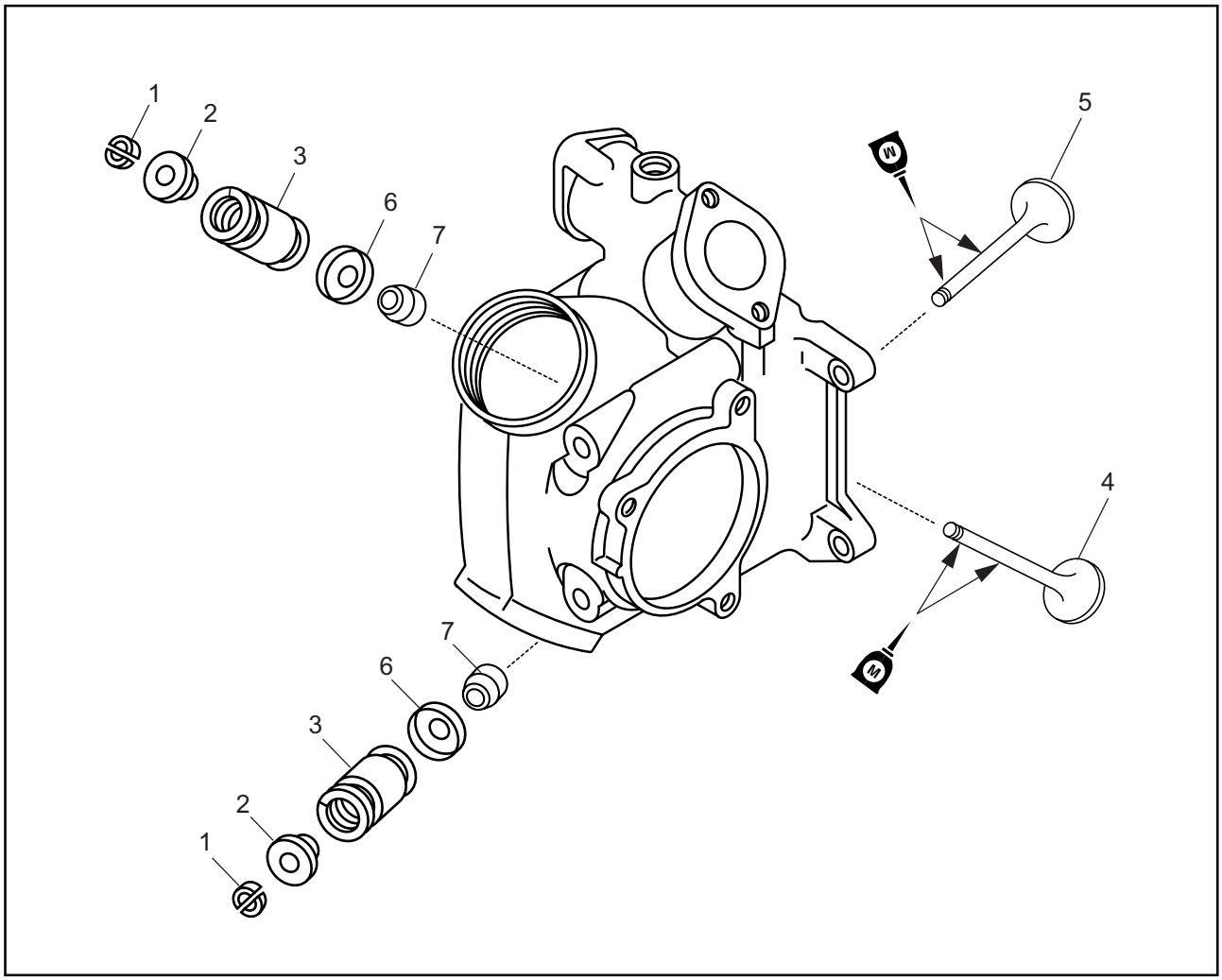


NOTE:
- Lubricate the cylinder head nuts with engine oil.
- Tighten the cylinder head nuts in the proper tightening sequence as shown and torque them in two stages.

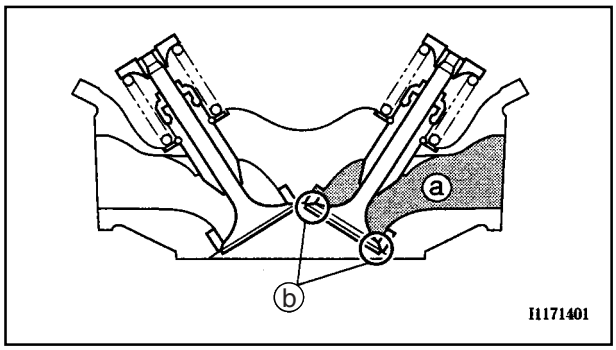
3. Install:
   - camshaft
   - rocker arms

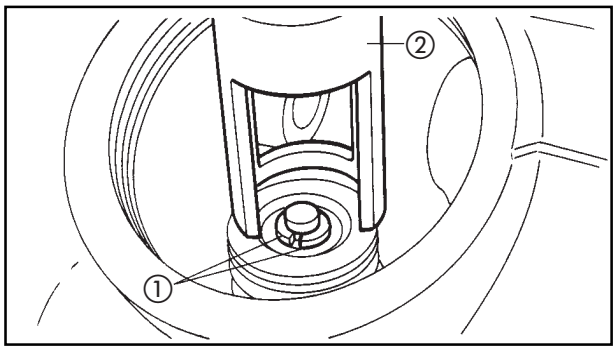
   Refer to "INSTALLING THE CAMSHAFTS AND ROCKER ARMS" section.

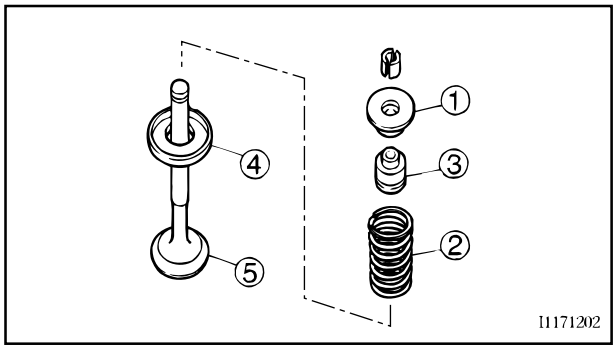
EASM0024
VALVES AND VALVE SPRINGS



Order	Job/Part	Q'ty	Remarks
	Removing the valves and valves springs		Remove the parts in the order listed.
	Cylinder head		Refer to "CYLINDER HEAD" section
	Rocker arm, rocker arm shaft		Refer to "CAMSHAFT" section.
1	Valve cotters	4	
2	Spring retainer	2	
3	Valve spring	2	Valve spring compressor: 90890-04019 Attachement: 90890-04108
4	Valve (intake)	1	
5	valve (exhaust)	1	
6	Valve guide (oil seals)	2	**NOTE:**
7	Spring seat	2	After installation, refer to "Adjusting valve" section in chapter 3.
			For installation, reverse the removal procedure.







EAS00238
REMOVING THE VALVES
The following procedure applies to all of the valves and related components.

NOTE:
Before removing the internal parts of the cylinder head (e.g., valves, valve springs, valve seats), make sure the valves properly seal.

1. Check:
   • valve
   (for leakage)
   Leakage at the valve seat → Check the valve face, valve seat, and valve seat width.
   Refer to "CHECKING THE VALVE SEATS" section.

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Pour a clean solvent ⓐ into the intake and exhaust ports.
b. Check that the valves properly seal.

NOTE:
There should be no leakage at the valve seat ⓑ.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

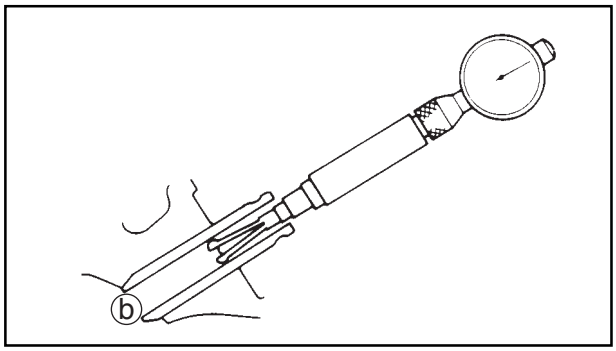
2. Remove:
   • valve cotters ①

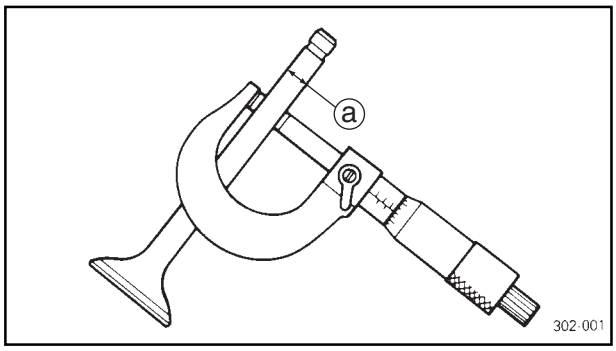
NOTE:
Remove the valve cotters by compressing the valve springs with the valve spring compressor and attachment ②.

Valve spring compressor
90890-04019
Attachment
90890-04108

3. Remove:
   • spring retainer ①
   • valve springs ②
   • oil seal ③
   • spring seat ④
   • valve ⑤

NOTE:
Identify the position of each part very carefully so that it can be reinstalled in its original place.





EAS00239
CHECKING THE VALVES AND VALVE GUIDES

The following procedure applies to all of the valves and valve guides.

1. Measure:
   • valve-stem-to-valve-guide clearance

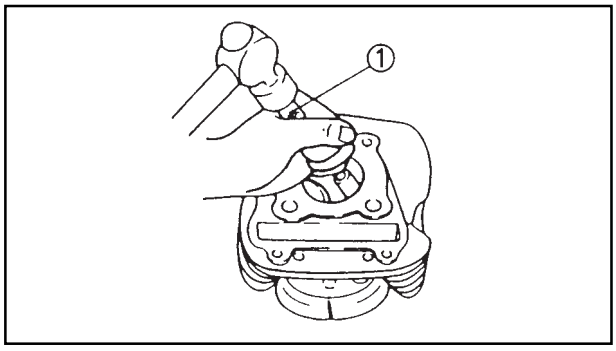
Valve-stem-to-valve-guide clearance = Valve guide inside diameter ⓑ – Valve stem diameter ⓐ

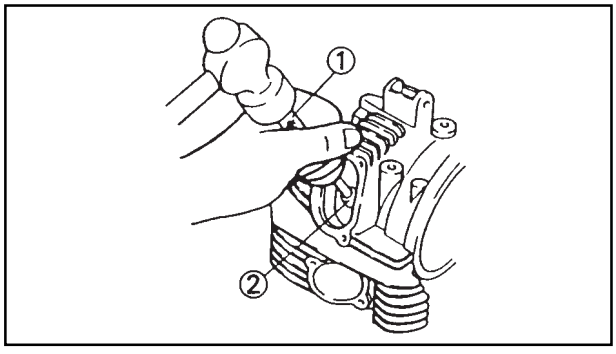
Out of specification → Replace the valve guide.

Valve guide inside diameter:
Intake
4.500 ~ 4.512 mm
<Limit>: 4.542 mm
Exhaust
4.500 ~ 4.512 mm
<limit>: 4.542 mm

Valve stem diameter:
Intake
4.475 ~ 4.490 mm
<limit>: 4.445 mm
Exhaust
4.460 ~ 4.475 mm
<limit>: 4.430 mm

Valve-stem-to-valve-guide clearance
Intake
0.01 ~ 0.037mm
<Limit>: 0.08 mm
Exhaust
0.025 ~ 0.052 mm
<Limit>: 0.10mm



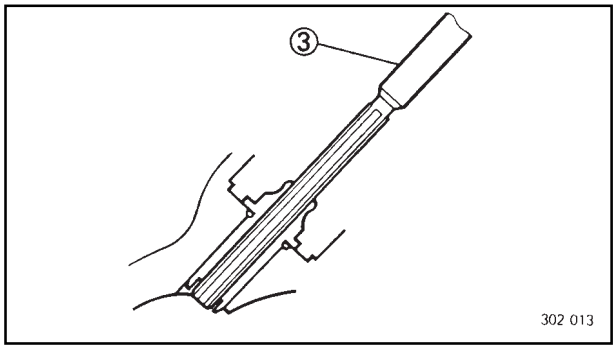


2. Replace:
   • valve guide

NOTE:
To ease valve guide removal and installation, and to maintain the correct fit, heat the cylinder head to 100°C in an oven.

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Remove the valve guide with the valve guide remover ①.
b. Install the new valve guide with the valve guide installer ② and valve guide remover ①.



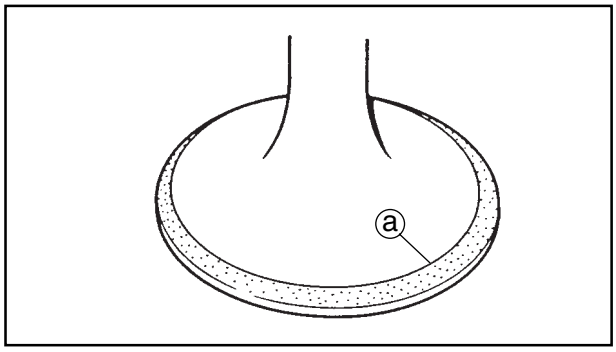
c. After installing the valve guide, bore the valve guide with the valve guide reamer ③ to obtain the proper valve-stem-to-valve-guide clearance.

NOTE:

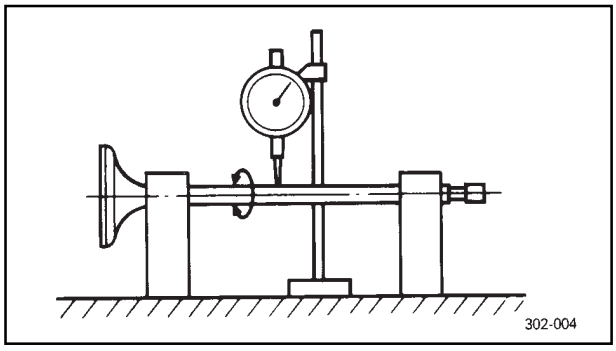
After replacing the valve guide, reface the valve seat .

Valve guide remover (4.5 mm)
90890-04116
Valve guide installer (4.5 mm)
90890-04117
Valve guide reamer (4.5 mm)
90890-04118

3. Remove:
   • carbon deposits
   (from the valve face and valve seat)
4. Check:
   • valve face
   Pitting/wear → Grind the valve face.
   • valve stem end
   Mushroom shape or diameter larger than the body of the valve stem → Replace the valve.



5. Measure:
   • valve margin thickness ⓐ
   Out of specification → Replace the valve.
6. Measure:
   • valve stem runout
   Out of specification → Replace the valve.



NOTE:

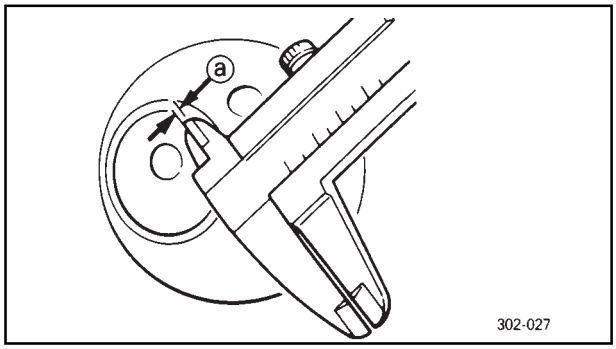
- When installing a new valve, always replace the valve guide.
- If the valve is removed or replaced, always replace the oil seal.

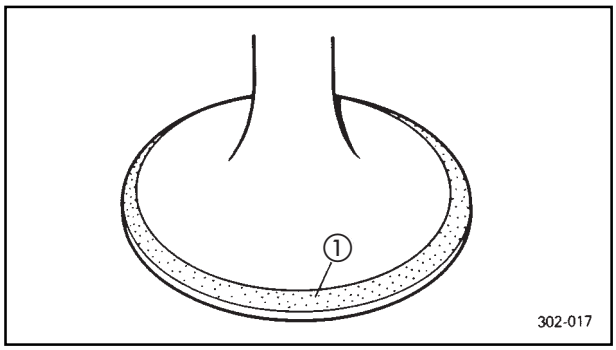
Valve stem runout
0.01 mm

EAS00240
CHECKING THE VALVE SEATS

The following procedure applies to all of the valves and valve seats.

1. Remove:
   • carbon deposits
   (from the valve face and valve seat)
2. Check:
   • valve seat
   Pitting/wear → Replace the cylinder head.



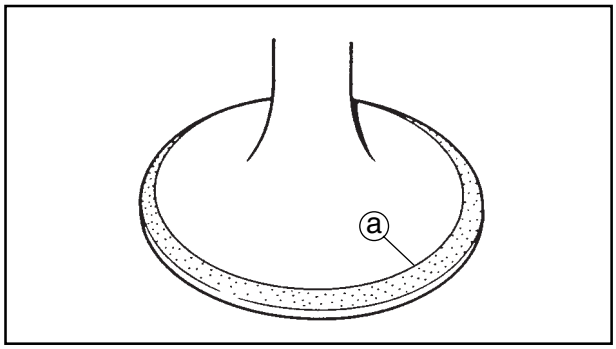


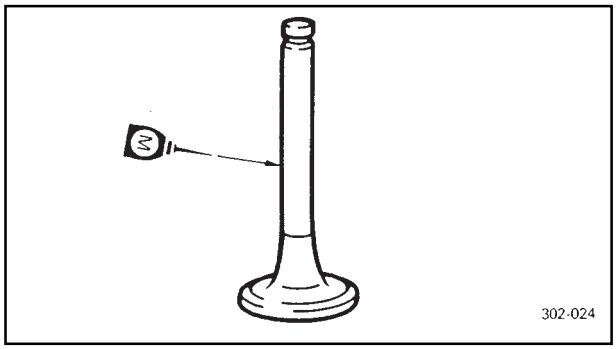
3. Measure:
   • valve seat width ⓐ
   Out of specification → Replace the cylinder head.

Valve seat width
Intake
0.9 ~ 1.1 mm
<limit>: 1.6 mm
Exhaust
0.9 ~ 1.1
<limit>: 1.6 mm)

a. Apply Mechanic's blueing dye (Dykem) onto the valve face ①.
b. Install the valve into the cylinder head.
c. Press the valve through the valve guide and onto the valve seat to make ⓐ clear impression.
d. Measure the valve seat width.

NOTE:
Where the valve seat and valve face contacted one another, the blueing will have been removed.





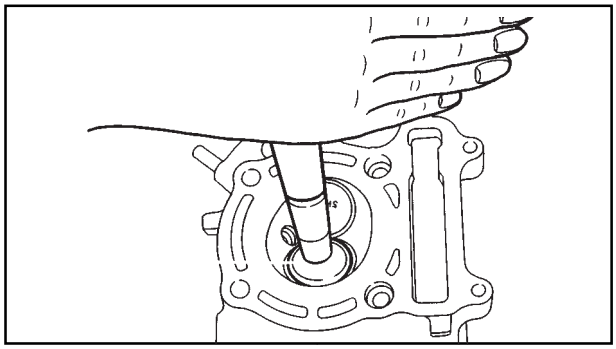
4. Lap:
   • valve face
   • valve seat

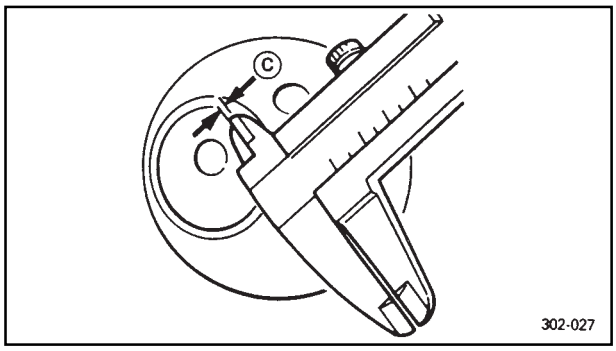
NOTE:
After replacing the cylinder head or replacing the valve and valve guide, the valve seat and valve face should be lapped.

a. Apply a coarse lapping compound ⓐ to the valve face.

CAUTION:
Do not let the lapping compound enter the gap between the valve stem and the valve guide.

b. Apply molybdenum disulfide oil onto the valve stem.





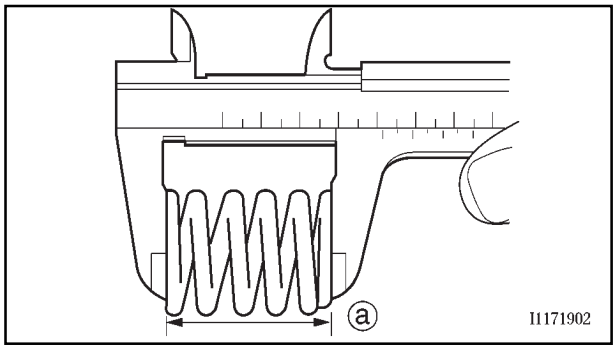
c. Install the valve into the cylinder head.
d. Turn the valve until the valve face and valve seat are evenly polished, then clean off all of the lapping compound.

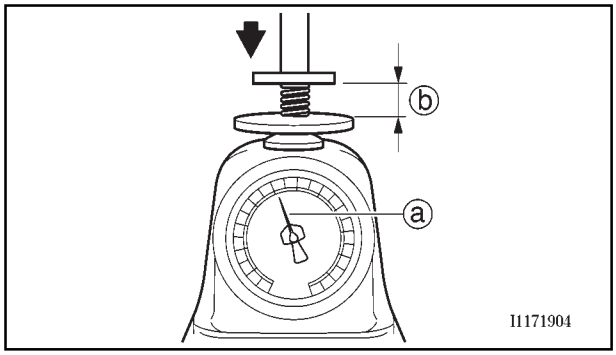
NOTE:

For the best lapping results, lightly tap the valve seat while rotating the valve back and forth between your hands.

e. Apply a fine lapping compound to the valve face and repeat the above steps.
f. After every lapping procedure, be sure to clean off all of the lapping compound from the valve face and valve seat.
g. Apply Mechanic's blueing dye (Dykem) onto the valve face.
h. Install the valve into the cylinder head.
i. Press the valve through the valve guide and onto the valve seat to make a clear impression.
j. Measure the valve seat width ⓒ again. If the valve seat width is out of specification, reface and lap the valve seat.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲





EAS00241

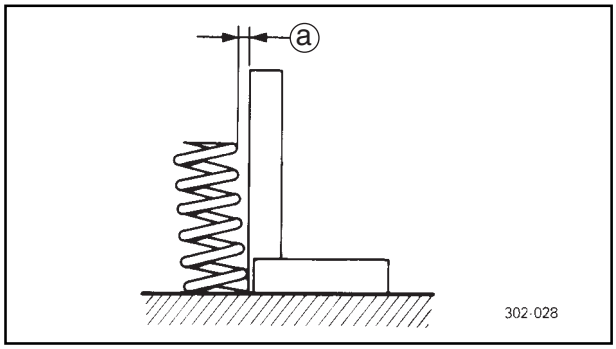
CHECKING THE VALVE SPRINGS

The following procedure applies to all of the valve springs.

1. Measure:
   • valve spring free length ⓐ
   Out of specification → Replace the valve spring.

Valve spring free length (intake and exhaust)
Valve spring
41.94 mm
<Limit>: 39.84mm

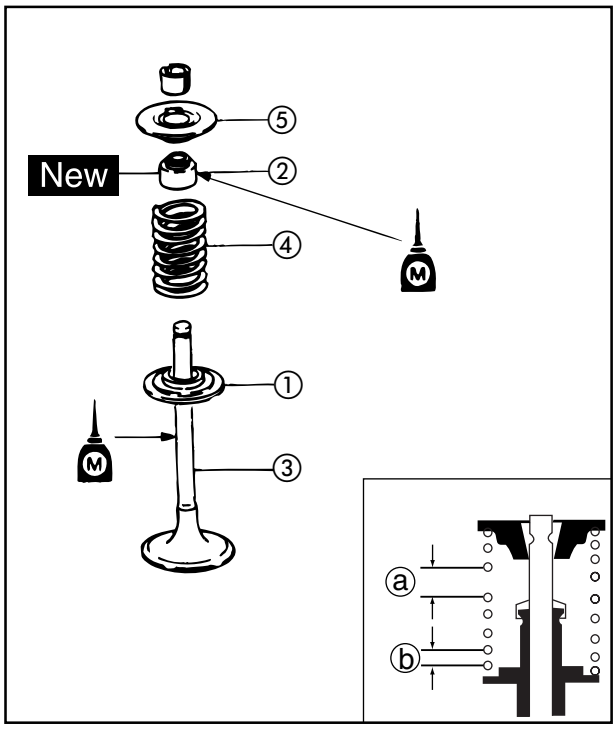
2. Measure:
   • compressed valve spring force ⓐ
   Out of specification → Replace the valve spring.
   ⓑ Installed length



Spring compressed pressure (intake and exhaust)
45.1 ~ 50.9 N

3. Measure:
   • valve spring tilt ⓐ
   Out of specification → Replace the valve spring.

Spring tilt limit
Intake and exhaust valve spring
2.5° / 1.9 mm



EAS00245
INSTALLING THE VALVES

The following procedure applies to all of the valves and related components.

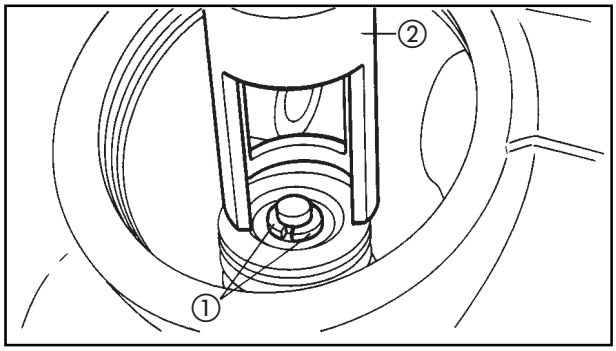
1. Deburr:
   • valve stem end
   (with an oil stone)
2. Lubricate:
   • valve stem
   • oil seal
   (with the recommended lubricant)

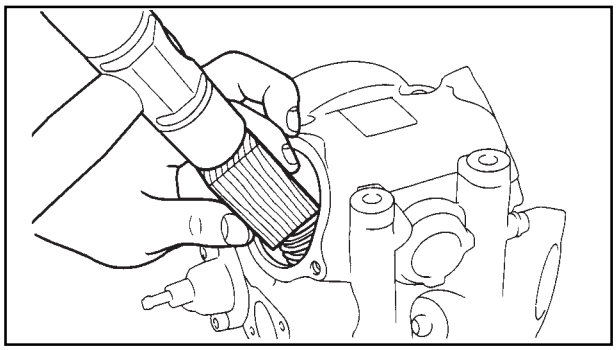
Recommended lubricant
Molybdenum disulfide oil

3. Install:
   • valve spring seat ①
   • valve stem seal ②
   • valve ③
   • valve spring ④
   • spring retainer ⑤
   (into the cylinder head)

NOTE:
Install the valve spring with the larger pitch ⓐ facing up.

ⓑ Smaller pitch





4. Install:
   • valve cotters ①

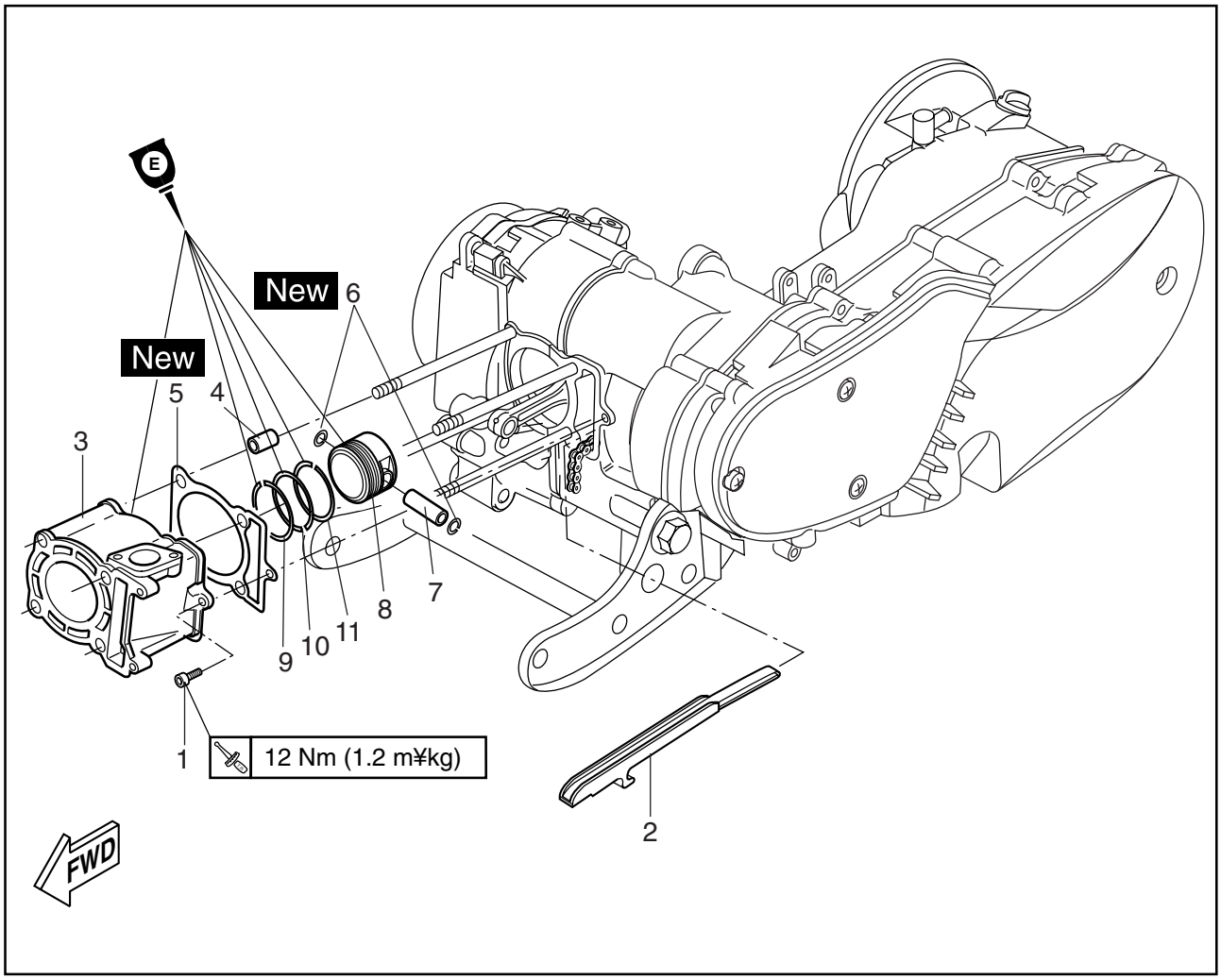
NOTE:
Install the valve cotters by compressing the valve spring with the valve spring compressor ② and attachment.

Valve spring compressor
90890-04019
Attachment
90890-04108

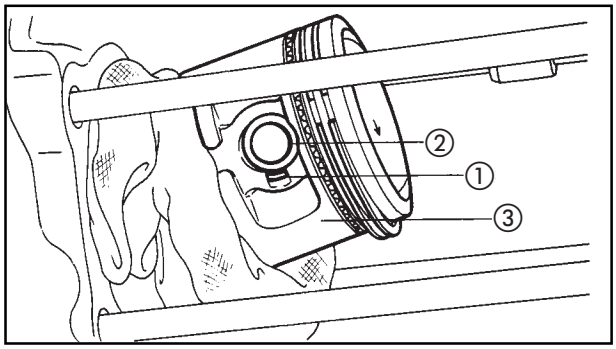
5. To secure the valve cotters onto the valve stem, lightly tap the valve tip with a soft-face hammer.

CAUTION:
Hitting the valve tip with excessive force could damage the valve.

EASM0025
CYLINDER AND PISTON



Order	Job/Part	Q'ty	Remarks
	Removing the cylinder and piston		Remove the parts in the order listed.
	Cylinder head		Refer to "CYLINDER HEAD" section.
1	Cylinder bolts	2	
2	Timing chain guide (lower)	1	
3	Cylinder	1	
4	Dowel pin	2	
5	Cylinder gasket	1	
6	Piston pin clip	2	
7	Piston pin	1	
8	Piston	1	
9	Piston ring (top)	1	
10	Piston ring (2nd)	1	
11	Oil ring	1	
			For installation, reverse the removal procedure.

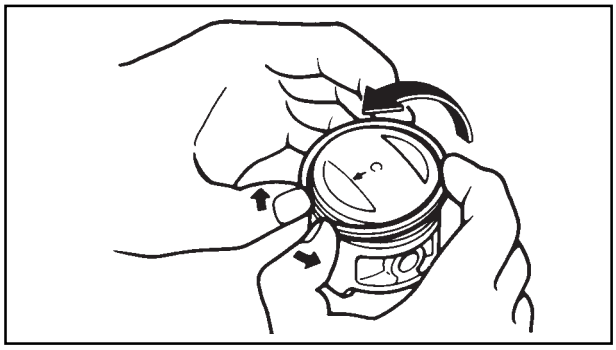


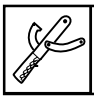
EAS00253
REMOVING THE CYLINDER AND PISTON

1. Remove:
   - piston pin clip ①
   - piston pin ②
   - piston ③

CAUTION:
Do not use a hammer to drive the piston pin out.

NOTE:
- Before removing the piston pin clip, cover the crankcase opening with a clean rag to prevent the piston pin clip from falling into the crankcase.
- Before removing the piston pin, deburr the piston pin clip's groove and the piston's pin bore area. If both areas are deburred and the piston pin is still difficult to remove, remove it with the piston pin puller.

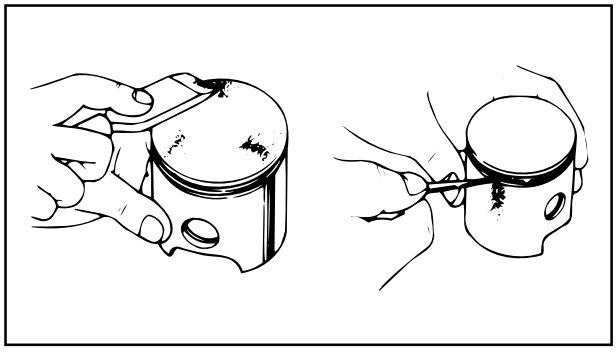




Piston pin puller
90890-01304

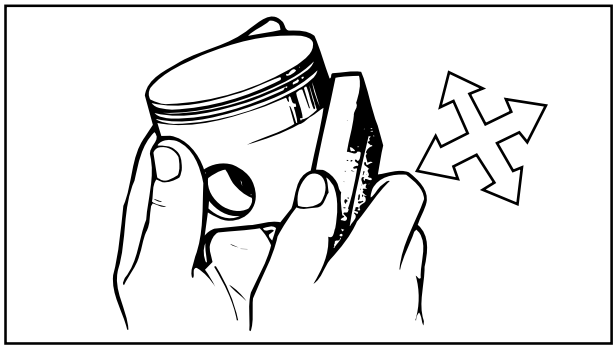
2. Remove:
   - top ring
   - 2nd ring
   - oil ring

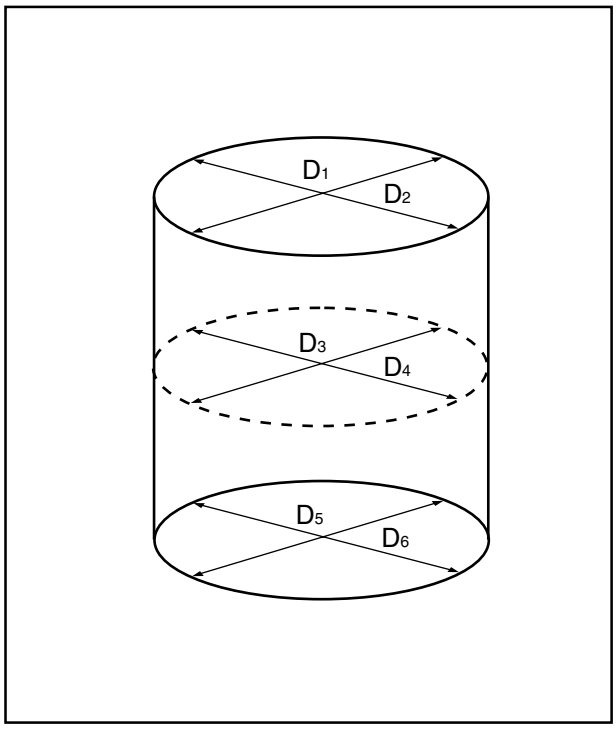
NOTE:
When removing a piston ring, open the end gap with your fingers and lift the other side of the ring over the piston crown.

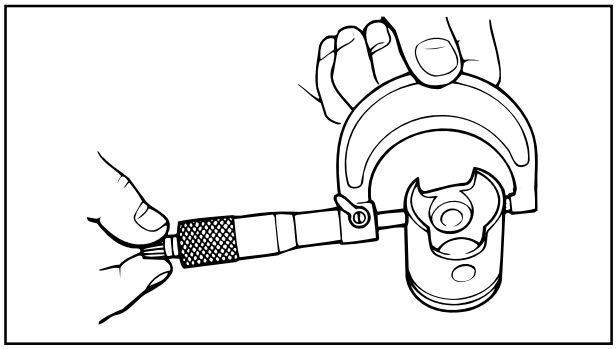


EAS00255
CHECKING THE CYLINDER AND PISTON

1. Check:
   - piston wall
   - cylinder wall
     Vertical scratches → Rebore or replace the cylinder, and replace the piston and piston rings as a set.







2. Measure:
   • piston-to-cylinder clearance

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Measure cylinder bore "C" with the cylinder bore gauge.

NOTE:
Measure cylinder bore "C" by taking side-to-side and front-to-back measurements of the cylinder. Then, find the average of the measurements.

Cylinder bore "C"	**XN 125**	**53.700 ~ 53.705 mm**
	XN 150	**59.500 ~ 59.505 mm**
Taper limit "T"		**0.05 mm**
Out-of-round "R"		**0.05 mm**

"C" = maximum of D_1 ~ D_2
"T" = maximum of D_1 or D_2 - maximum of D_5 or D_6
"R" = maximum of D_1, D_3 or D_5 - minimum of D_2, D_4 or D_6

b. If out of specification, rebore or replace the cylinder, and replace the piston and piston rings as a set.
c. Measure piston skirt diameter "P" with the micrometer.

		Piston size "P"
Standard	**XN 125**	**53.670 ~ 53.687 mm**
	XN 150	**59.470 ~ 59.487 mm**
Oversize 2	**XN 125**	**53.92 mm**
	XN 150	**59.72 mm**
Oversize 4	**XN 125**	**54.17 mm**
	XN 150	**59.97 mm**

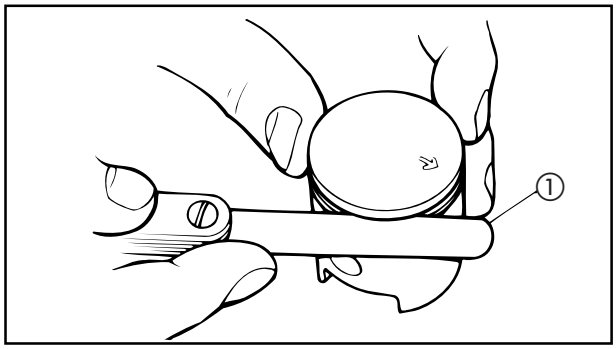
d. If out of specification, replace the piston and piston rings as a set.
e. Calculate the piston-to-cylinder clearance with the following formula.

Piston-to-cylinder clearance =
Cylinder bore "C" -
Piston skirt diameter "P"

Piston-to-cylinder clearance
0.025 ~ 0.035 mm
<Limit>: 0.15mm

f. If out of specification, rebore or replace the cylinder, and replace the piston and piston rings as a set.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

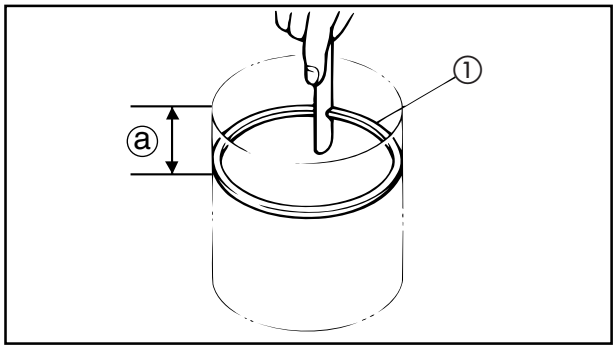


EAS00264
CHECKING THE PISTON RINGS

1. Measure:
   • piston ring side clearance ①
   Out of specification → Replace the piston and piston rings as a set.

NOTE:
Before measuring the piston ring side clearance, remove any carbon deposits from the piston ring grooves and piston rings.

Piston ring side clearance
Top ring
0.03 ~ 0.07 mm
<Limit>: 0.12 mm
2nd ring
0.02 ~ 0.06
<Limit>: 0.12 mm



2. Install:
   • piston ring
   (into the cylinder)

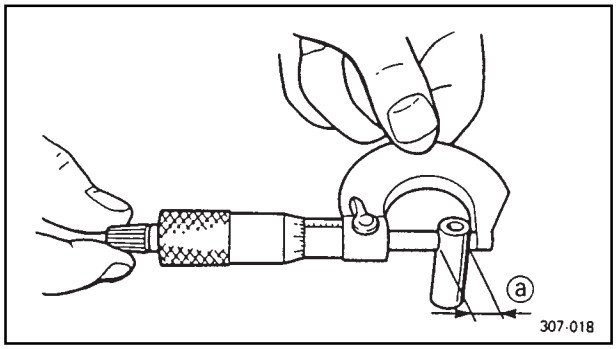
NOTE:
Level the piston ring into the cylinder with the piston crown.

ⓐ 0.5 mm

3. Measure:
   • piston ring end gap ①
   Out of specification → Replace the piston ring.

NOTE:
The oil ring expander spacer's end gap cannot be measured. If the oil ring rail's gap is excessive, replace all three piston rings.

Piston ring end gap
Top ring
0.15 ~ 0.25 mm
<Limit>: 0.50 mm
2nd ring
0.15 ~ 0.30 mm
<Limit>: 0.65 mm
Oil ring
0.20 ~ 0.70 mm



EAS00265
CHECKING THE PISTON PIN

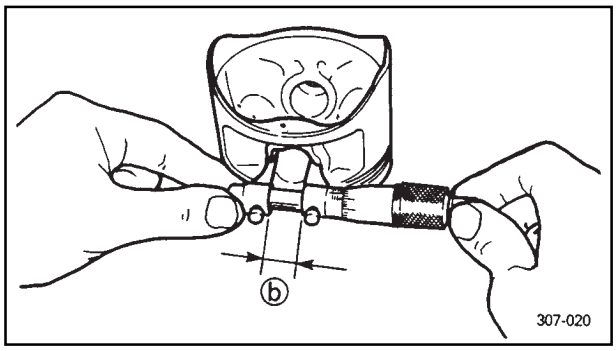
1. Check:
   • piston pin
   Blue discoloration / grooves → Replace the piston pin and then check the lubrication system.
2. Measure:
   • piston pin outside diameter ⓐ
   Out of specification → Replace the piston pin.

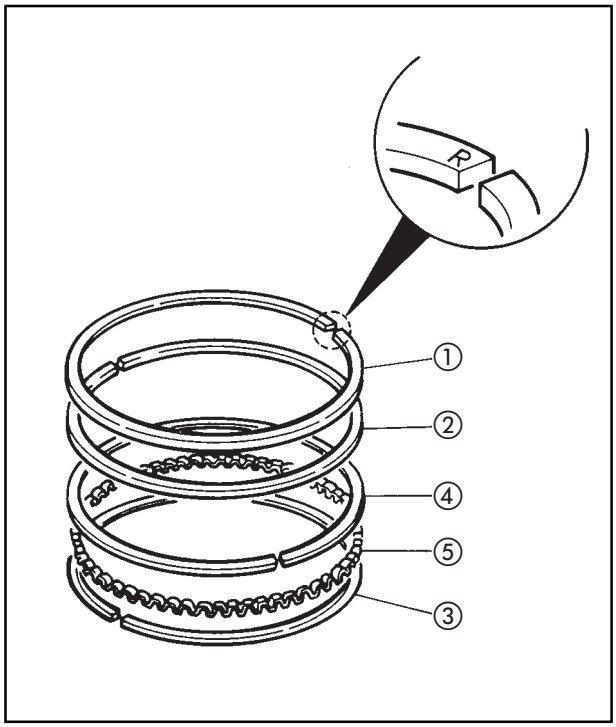
Piston pin outside diameter
14.991 ~ 15.000 mm

3. Calculate:
   • piston-pin-to-piston clearance
   Out of specification → Replace the piston pin and piston as a set.

Piston-pin-to-piston clearance =
Piston pin bore size ⓑ –
Piston pin outside diameter ⓐ

Piston-pin-to-piston clearance
0.002 ~ 0.022 mm

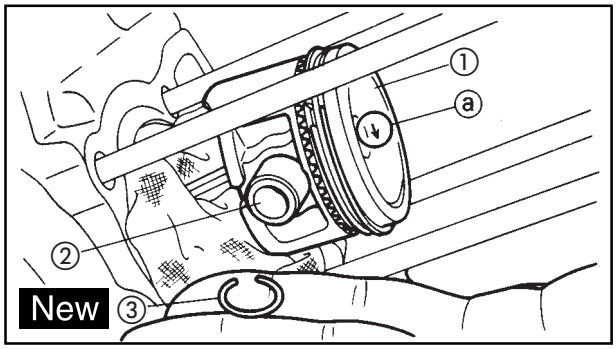




EAS00267
INSTALLING THE PISTON AND CYLINDER

1. Install:
   • top ring ①
   • 2nd ring ②
   • lower oil ring rail ③
   • upper oil ring rail ④
   • oil ring expander ⑤

NOTE:
Be sure to install the piston rings so that the manufacturer's marks or numbers face up.

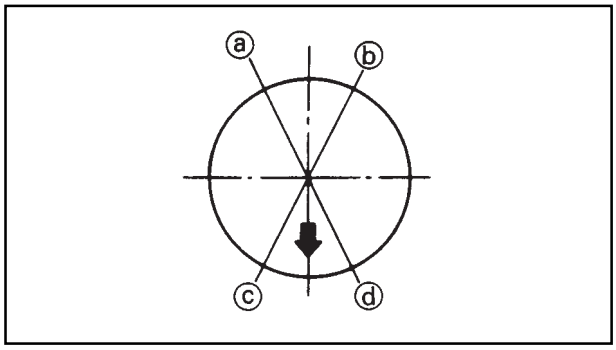


2. Install:
   • piston ①
   • piston pin ②
   • piston pin clip New ③

NOTE:
- Lubricate the piston pin with engine oil.
- Make sure the arrow mark ⓐ on the piston points towards the exhaust side of the cylinder.
- Before installing the piston pin clip, cover the crankcase opening with a clean rag to prevent the clip from falling into the crankcase.

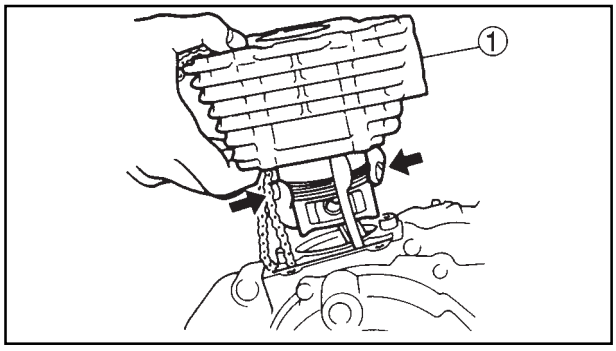
3. Install:
   • gasket New
   • dowel pins
4. Lubricate:
   • piston
   • piston rings
   • cylinder
   (with the recommended lubricant)

	Recommended lubricant **Engine oil**



5. Offset:
   • piston ring end gaps

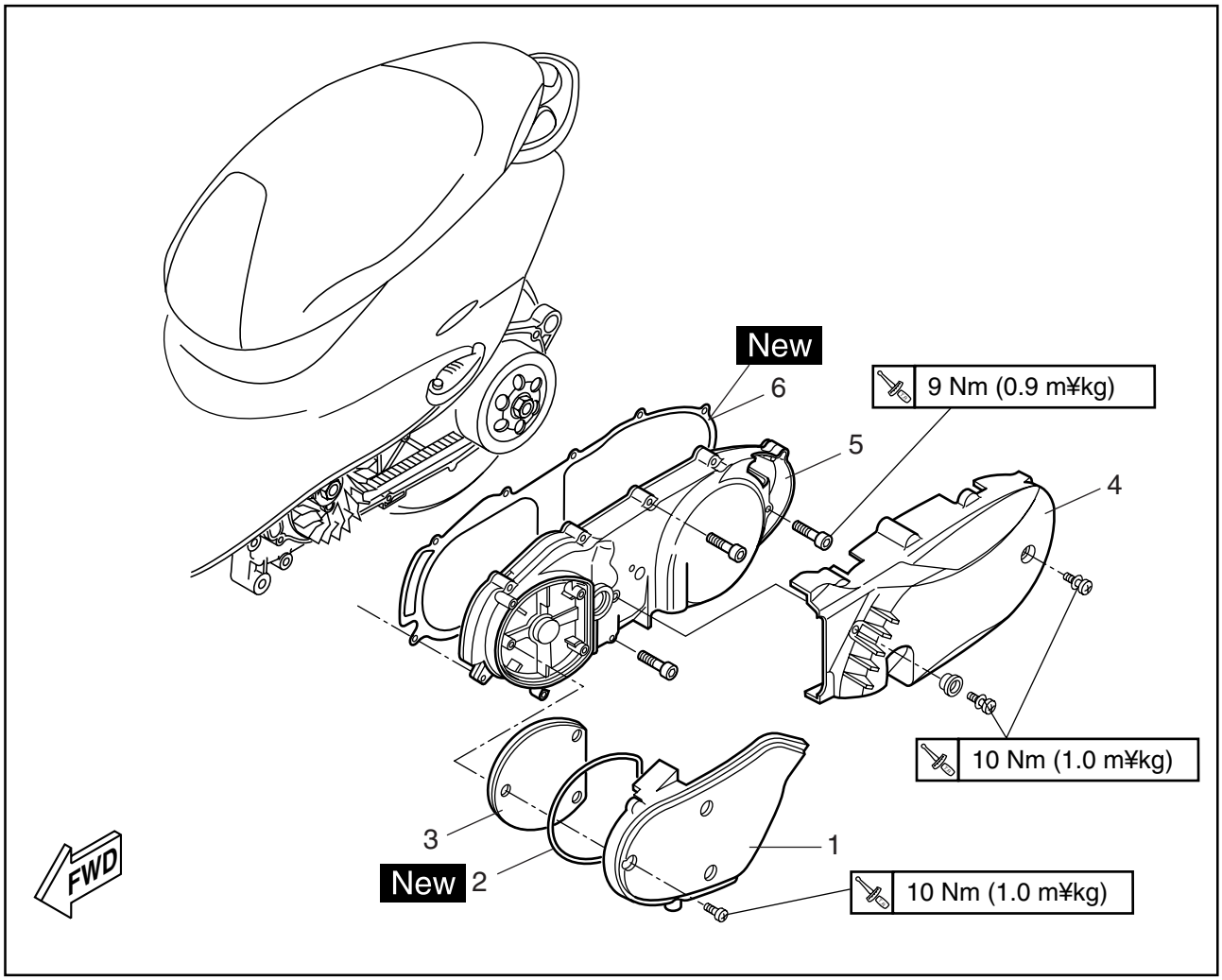
ⓐ Top ring
ⓑ Lower oil ring rail
ⓒ Upper oil ring rail
ⓓ 2nd ring



6. Install:
   • cylinder ①

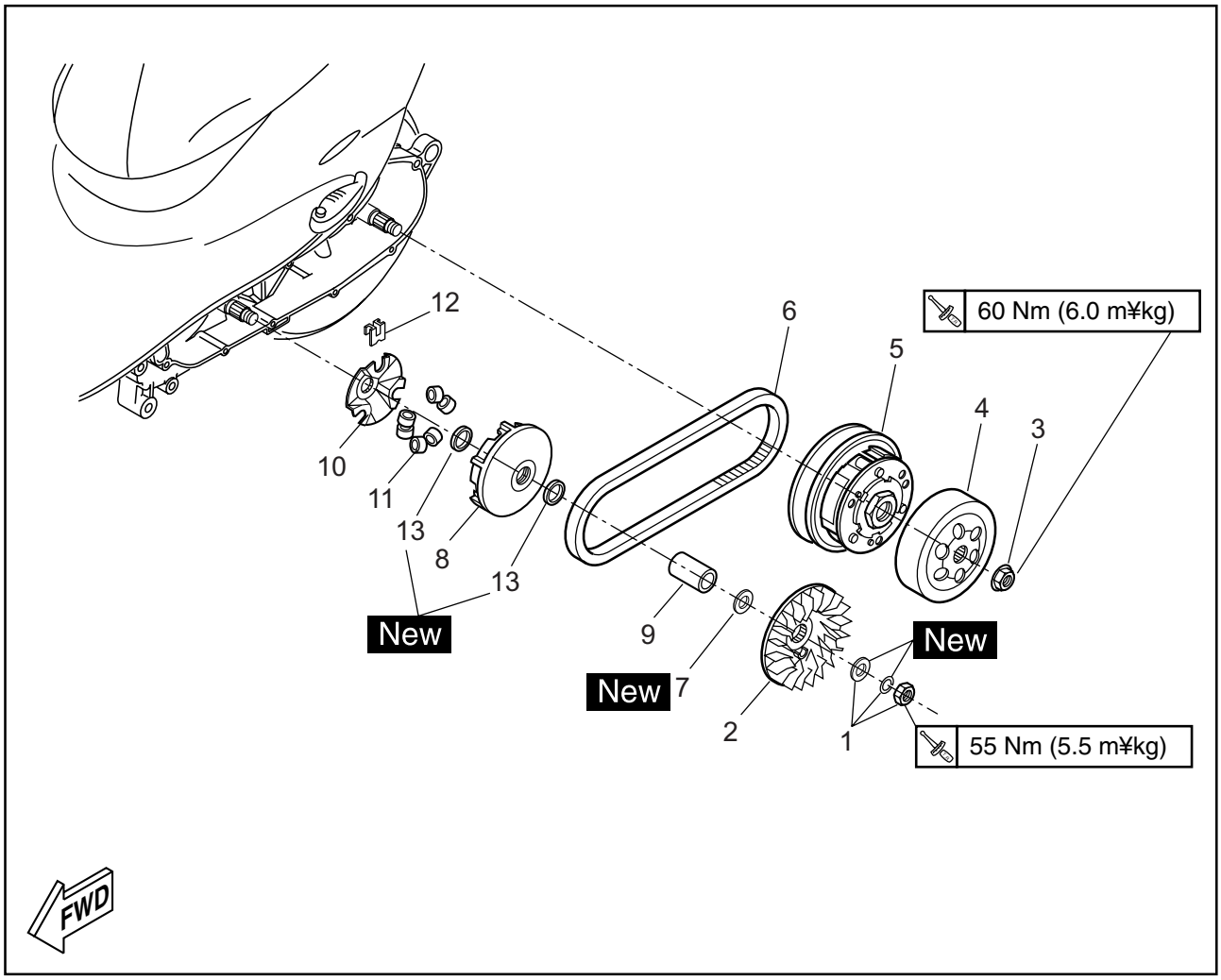
NOTE:
- While compressing the piston rings with one hand, install the cylinder with the other hand.
- Pass the timing chain and timing chain guide (lower) through the timing chain cavity.

EASM0026
CLUTCH
CRANKCASE COVER



Order	Job/Part	Q'ty	Remarks
	Removing the crankcase cover		Remove the parts in the order listed.
	Side covers		Refer SIDE COVERS AND SEAT" section in chapter 3.
1	Air filter crankcase cover	1	
2	Air filter crankcase cover gasket	1	
3	Air filter crankcase element	1	
4	Crankcase cover protector	1	
5	Crankcase cover (left)	1	
6	Crankcase cover gasket	1	
			For installation, reverse the removal procedure.

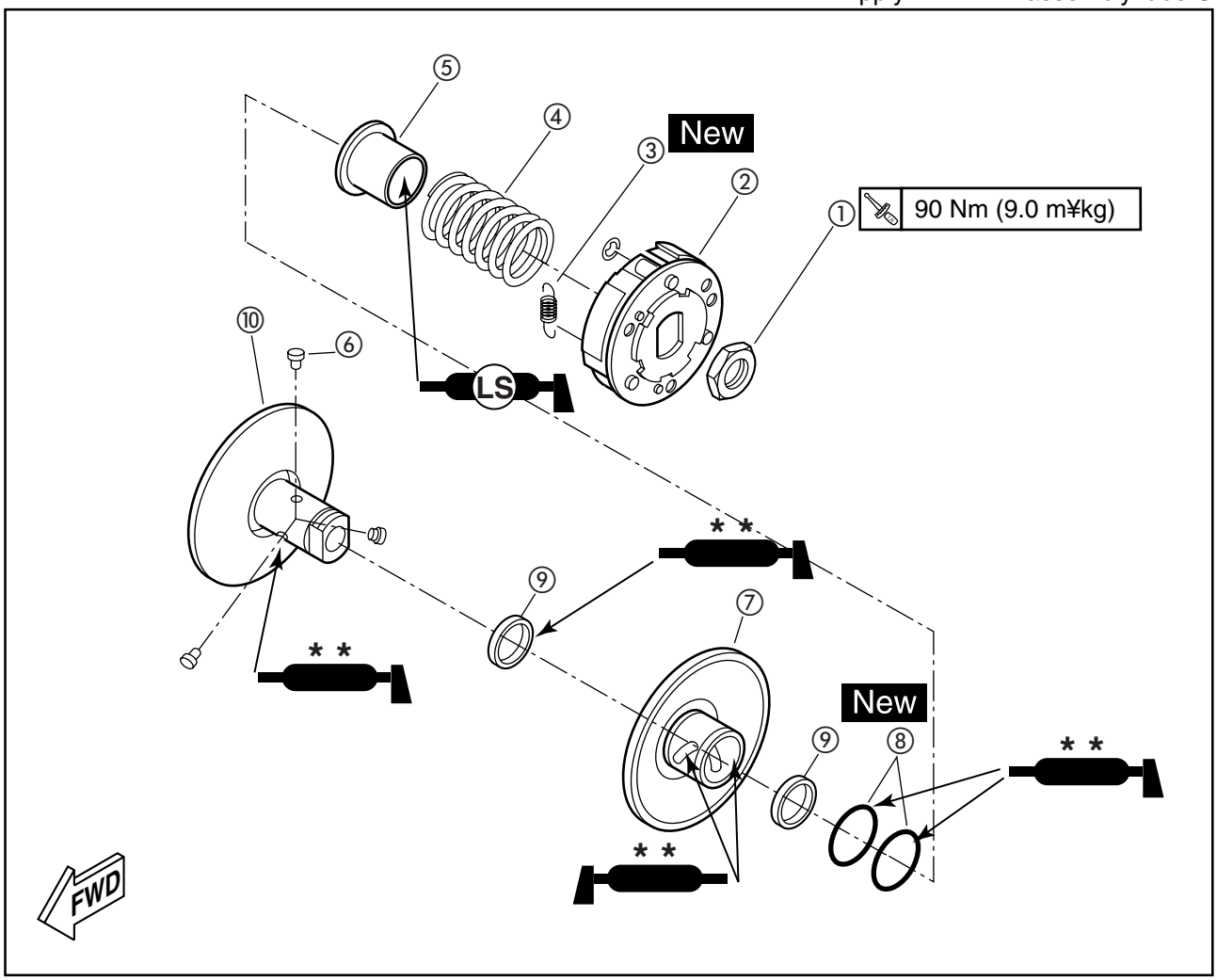
EASM0027
V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE



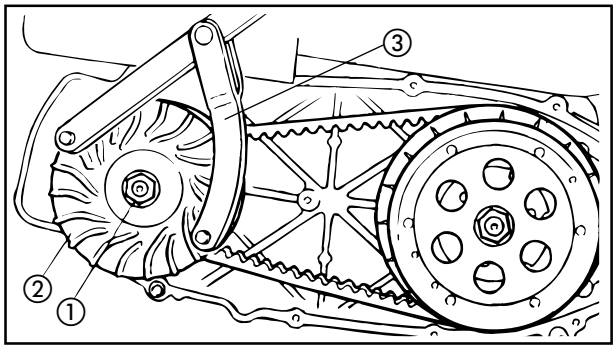
Order	Job/Part	Q'ty	Remarks
	Removing the V-belt, clutch and secondary/primary sheave		Remove the parts in the order listed.
1	Nut/plain washer/washer	1/1/1	Refer to "REMOVING THE PRIMARY SHEAVE" section.
2	Primary fixed sheave	1	
3	Nut	1	Refer to "REMOVING THE SECONDARY SHEAVE AND V-BELT" section.
4	Clutch housing	1	
5	Clutch assembly	1	Refer to "INSTALLING THE SECONDARY SHEAVE" section.
6	V-belt	1	
7	Washer	1	Refer to "ASSEMBLING THE PRIMARY SHEAVE" section.
8	Primary sliding sheave	1	
9	Collar	1	
10	Cam	1	
11	Weight	6	
12	Slider	3	
13	Oil seal	2	
			For installation, reverse the removal procedure.

EASM0028
SECONDARY SHEAVE

** Apply BEL-RAY assembly lube ®



Order	Job/Part	Q'ty	Remarks
	Disassembling the secondary sheave		Disassemble the parts in the order listed.
①	Nut	1	Refer to "DISASSEMBLING THE SECONDARY SHEAVE" section. Refer to "INSTALLING THE SECONDARY SHEAVE" section.
②	Clutch carrier	1	
③	Clutch shoe spring	3	
④	Compression spring	1	
⑤	Spring seat	1	
⑥	Guide pin	3	Refer to "INSTALLING THE SECONDARY SHEAVE" section.
⑦	Secondary sliding sheave	1	
⑧	O-ring	2	
⑨	Oil seal	2	
⑩	Secondary fixed sheave	1	
			For assembly, reverse the disassembly procedure.



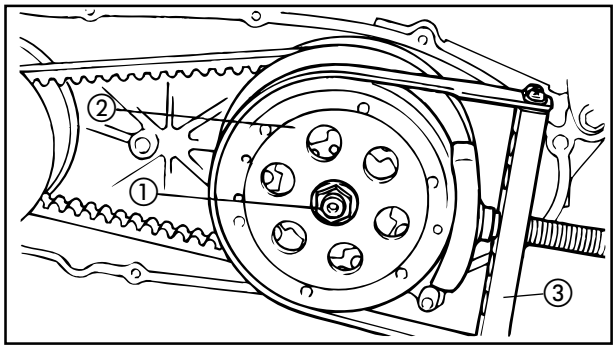
REMOVING THE PRIMARY SHEAVE

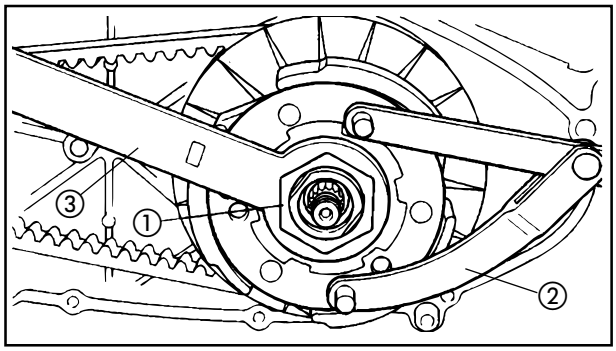
1. Remove:
   - nut ① (primary sheave)
   - plate washer
   - primary fixed sheave ②

NOTE:

Loosen the nut (primary fixed sheave) while holding the primary fixed sheave with the rotor holder ③.

	Rotor holder **90890-01235**





REMOVING THE SECONDARY SHEAVE AND V-BELT

1. Remove:
   - nut ① (secondary sheave)
   - clutch housing ②

NOTE:

Loosen the nut (secondary sheave) while holding the clutch housing with the sheave holder ③.

	Sheave holder **90890-01701**

2. Remove:
   - nut ① (clutch carrier)

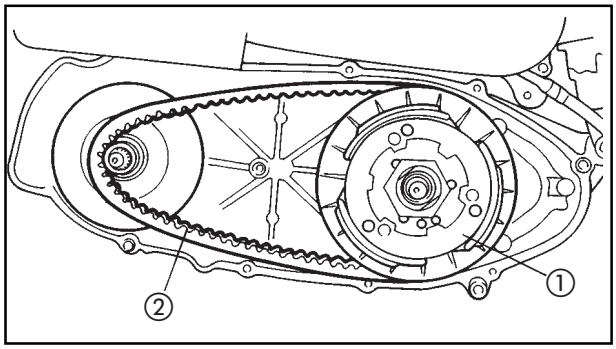
CAUTION:

Do not remove the nut (clutch carrier) yet.

NOTE:

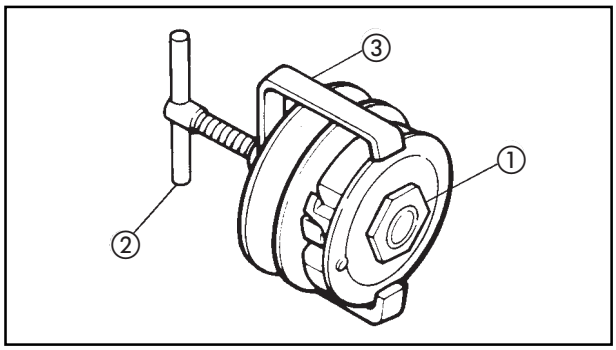
Loosen the nut (clutch carrier) one turn using the locknut wrench ③ while holding the clutch carrier with the rotor holder ②.

	Rotor holder **90890-01235**



3. Remove:
   • clutch assembly ①
   • V-belt ②

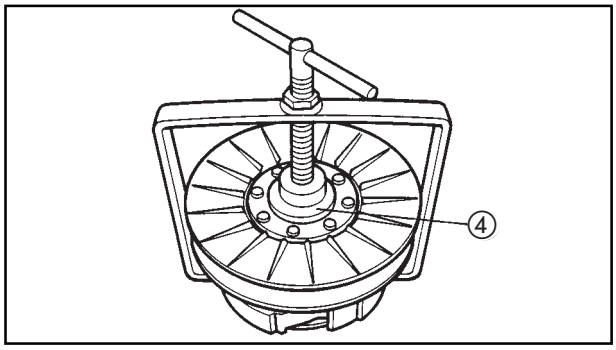
NOTE:
Remove the V-belt from the primary sheave side with clutch assembly.



DISASSEMBLING THE SECONDARY SHEAVE

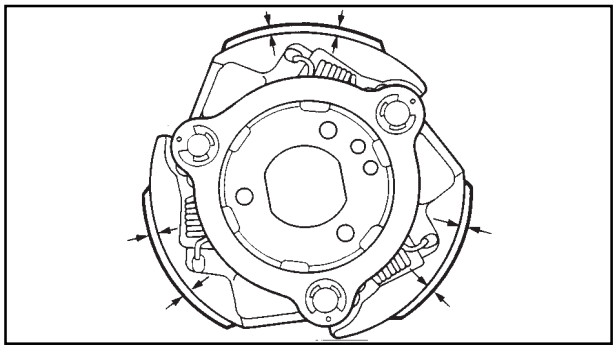
1. Remove:
   • nut ① (secondary sheave)

NOTE:
Loosen the nut ① while attaching the clutch spring compressor ② and clutch spring holder arm ③ and release the compressed spring after removing the nut.



CAUTION:
Use the spacer ④ (ø 40 mm, thickness: 2~3 mm).

Clutch spring holder
90890-01337
Clutch spring holder arm
90809-01464

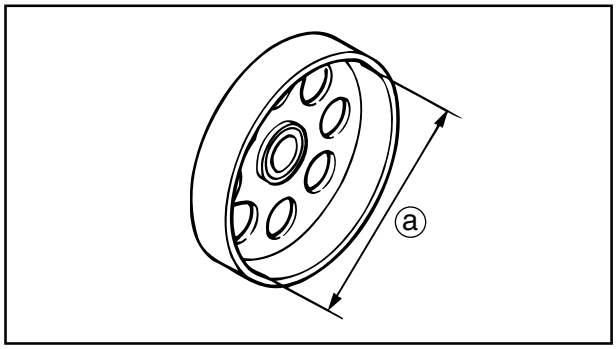


CHECKING THE CLUTCH

1. Measure:
   • clutch shoe thickness.
   Scratches → Glaze using coarse sandpaper.
   Wear/damage → Replace.

Clutch shoe thickness
2.0 mm
<Limit>: 1.0 mm

NOTE:
- After using the sandpaper, clean off the polished particles.
- Inspect the other clutch shoes.
- Replace the all three as a set.

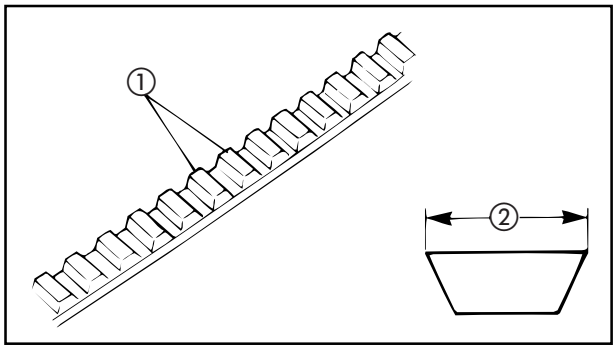


EAS00290
CHECKING THE CLUTCH HOUSING
1. Check:
   • clutch housing
   Damage/wearr → Replace.
2. Measure:
   • clutch housing inside diameter ⓐ
   Out of specification → Replace the clutch housing.

Clutch housing inside diameter
XN125: 120 mm
XN150: 135 mm
<Limit XN125>: 120.5 mm
<Limit XN150>: 130.5 mm

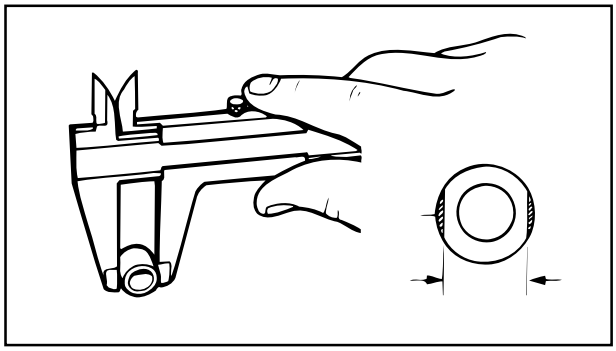
EAS00282
CHECKING THE CLUTCH SPRINGS
The following procedure applies to all of the clutch springs.
1. Check:
   • clutch spring
   Damage → Replace the clutch springs as a set.
2. Measure:
   • clutch spring free length
   Out of specification → Replace the clutch springs as a set.

Clutch spring free length
XN125: 28 mm
XN150: 31.3 mm



CHECKING THE V-BELT
1. Check:
   • V-belt ①
   Cracks/wear/scaling/chipping → Replace.
   Oil/grease → Check the secondary sheave.
2. Measure:
   • V-belt width ②
   Out of specification → Replace.

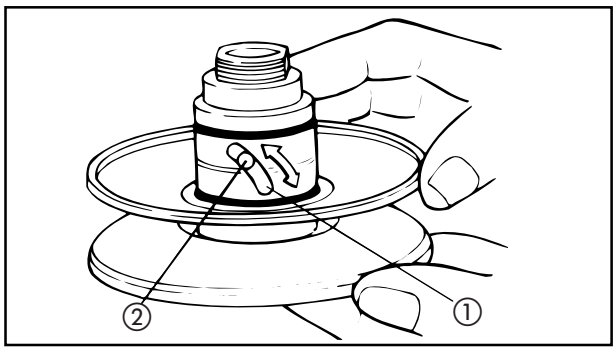
V-belt width
22 mm
<Limit>: 19 mm



CHECKING THE WEIGHTS

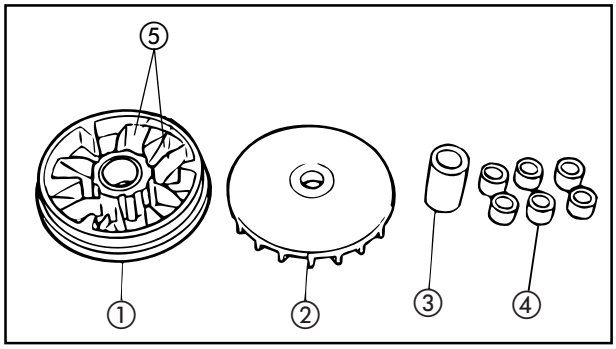
1. Check:
   - weight minimum outside diameter
     Cracks/wear/scaling/chipping → Replace.
     Out of specification → Replace.

Weight out side diameter
20.0 mm
<Limit>: 19.5 mm



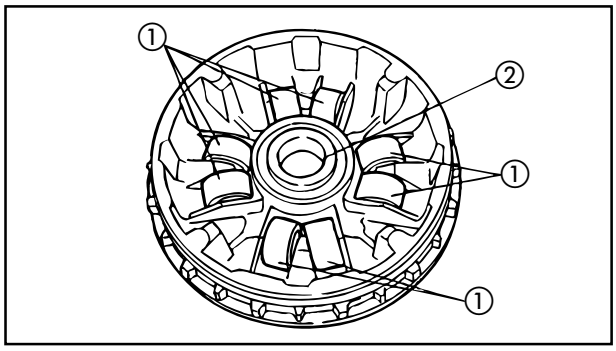
CHECKING THE SECONDARY SHEAVE

1. Check:
   - secondary fixed sheave smooth operation
   - secondary sliding sheave smooth operation
     Scratches/damage → Replace as a set.
2. Check:
   - Torque cam groove ①
     Wear/damage → Replace.
3. Check:
   - Guide pin ②
     Wear/damage → Replace.

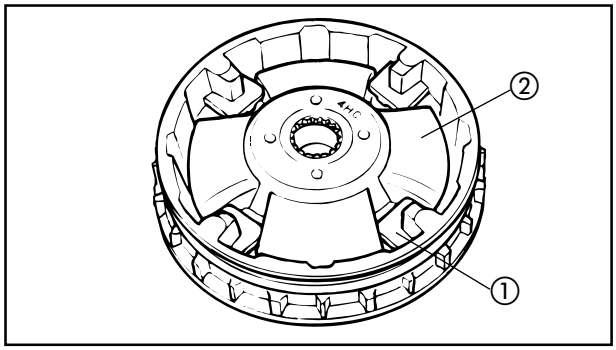


ASSEMBLING THE PRIMARY SHEAVE

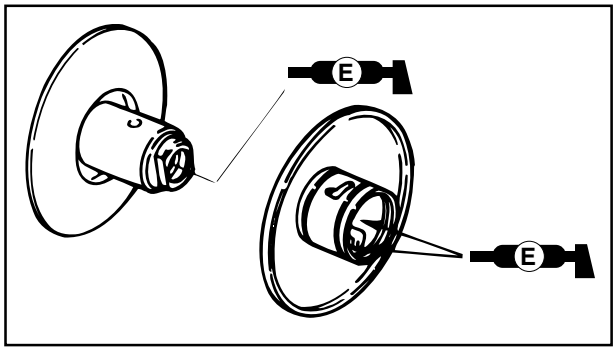
1. Clean:
   - primary sliding sheave face ①
   - primary fixed sheave face ②
   - collar ③
   - weight ④
   - primary sliding sheave cam face ⑤



2. Install:
   - weight ①
   - collar ②

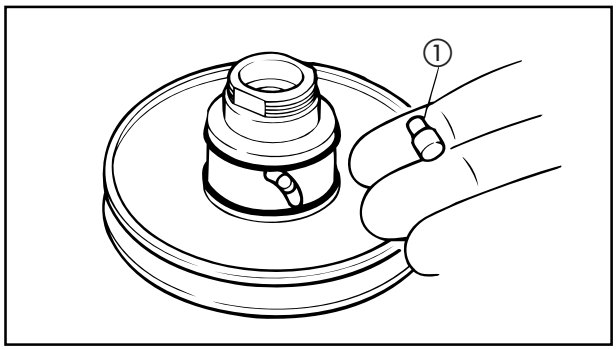


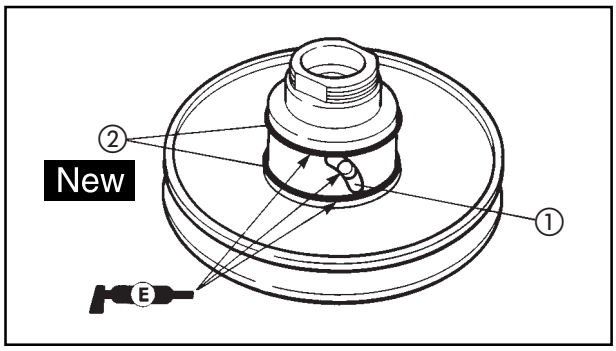
3. Install:
   - slider ①
   - cam ②



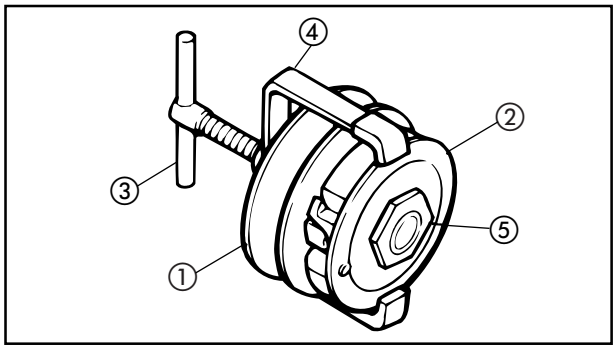
INSTALLING THE SECONDARY SHEAVE

1. Apply:
   - BEL-RAY assembly lube ®
     (to the secondary sliding sheave inner surface, grease nipple groove, and oil seals)
   - BEL-RAY assembly lube ®
     (to the bearings, oil seals and inner surface of the secondary fixed sheave)
2. Install:
   - secondary sliding sheave
3. Install:
   - guide pin ①





4. Apply:
   - BEL-RAY assembly lube ®
     (to the guide pin sliding groove ①, and oil seal ② New)



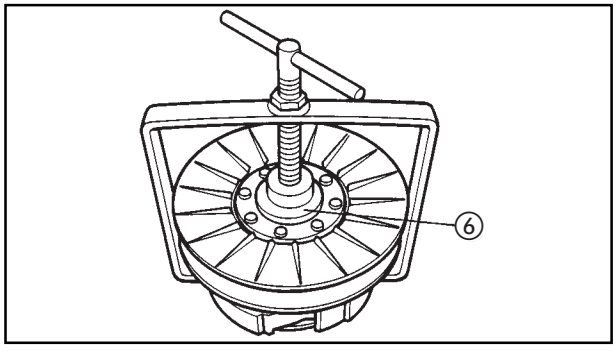
5. Install:
   - secondary sheave complete ①
   - compression spring
   - clutch carrier ②

NOTE:

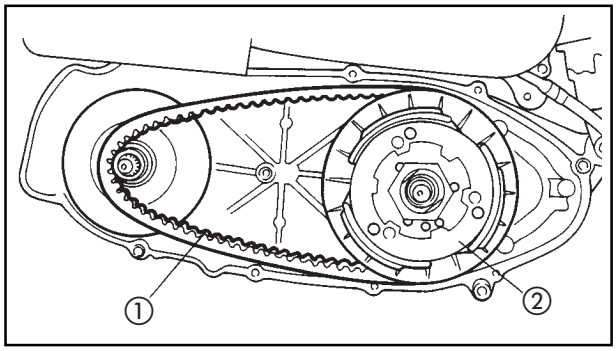
Temporarily tighten the nut ⑤ while attaching the clutch spring holder ③ and clutch spring holder arm ④ and compress the spring.

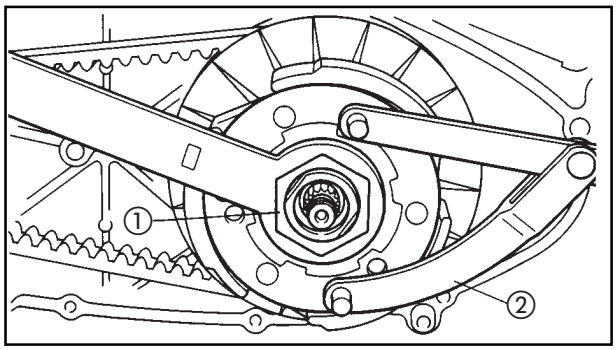
CAUTION:

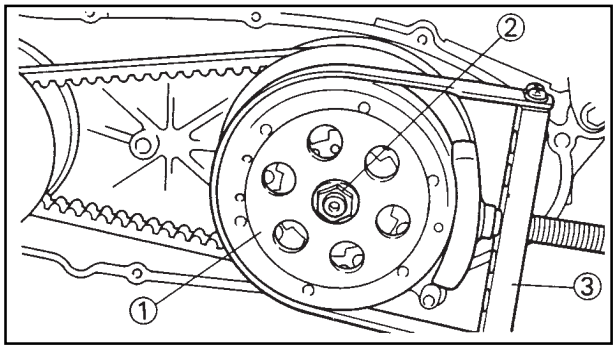
Use the spacer ⑥ (ø 40 mm, thickness: 2~3 mm).



Clutch spring holder
90890-01337
Clutch spring holder arm
90890-01464







6. Install:
   • V-belt ①
   • clutch assembly ②

NOTE:
Install the V-belt with the clutch assembly to the primary sheave side.

CAUTION:
Never smear grease to the V-belt, secondary sheave and clutch.

7. Install:
   • nut ① (clutch carrier) **90 Nm (9.0m•kg)**

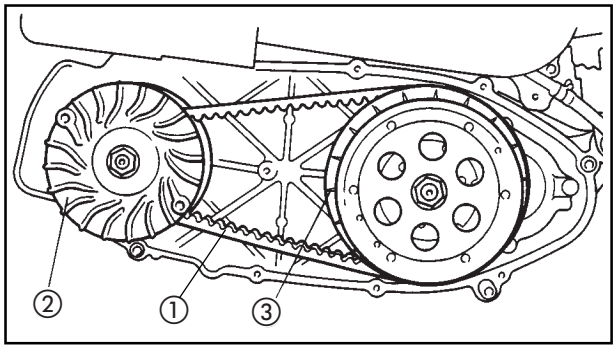
NOTE:
Tighten the nut (clutch carrier), using the locknut wrench whlie holding the clutch carrier with the rotor holder ②.

	Rotor holder **90890-01235**

8. Install:
   • clutch housing ①
   • nut ② (clutch housing) **60 Nm (6.0 m•kg)**

NOTE:
Tighten the nut (clutch housing), using the sheave holder ③.

	Sheave holder **90890-01701**



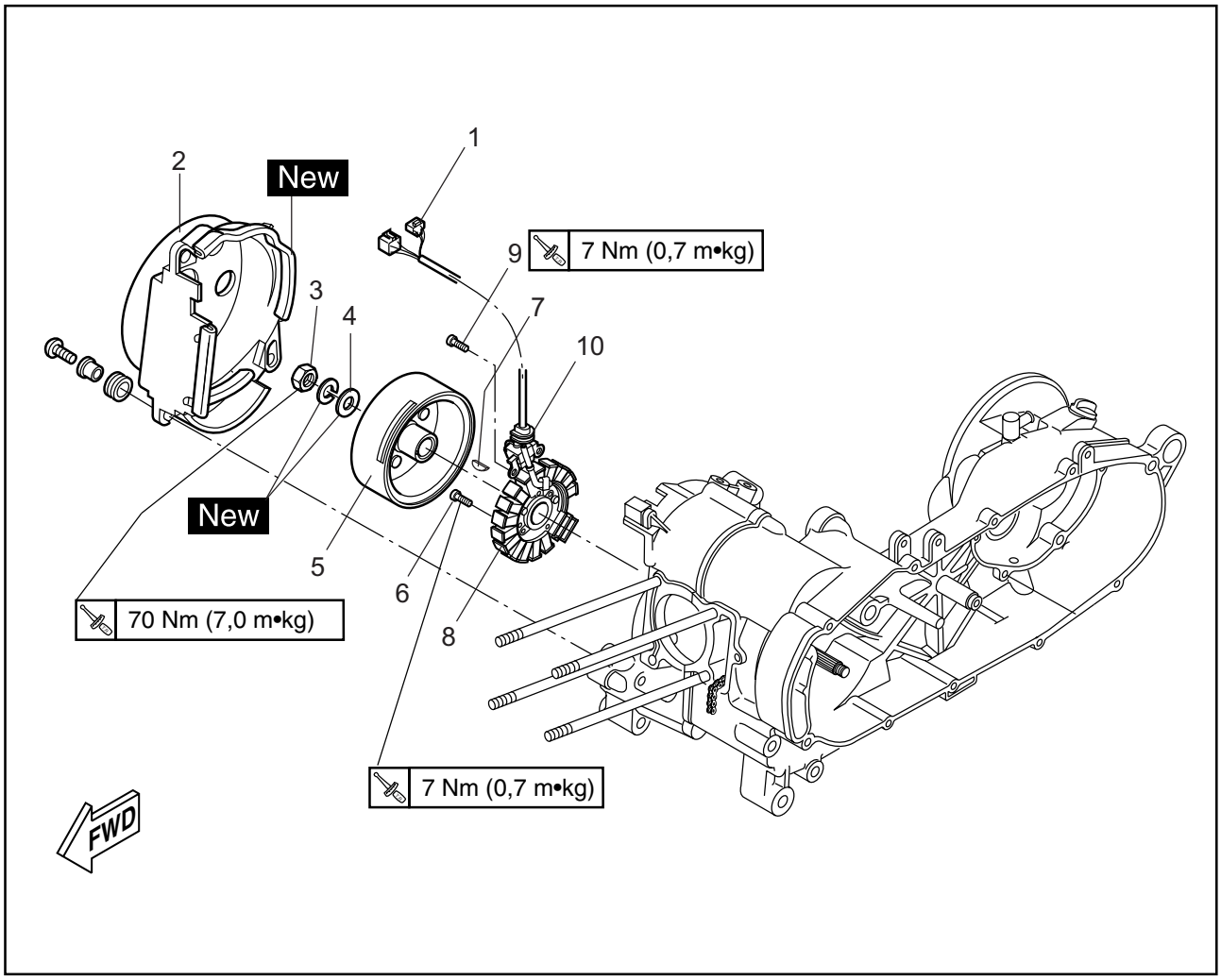
9. Set:
   • V-belt ①

NOTE:
Move the V-belt to minimum diameter of the primary sheave ②, maximum diameter of the secondary sheave ③ and make the V-belt tense.

EASM0029

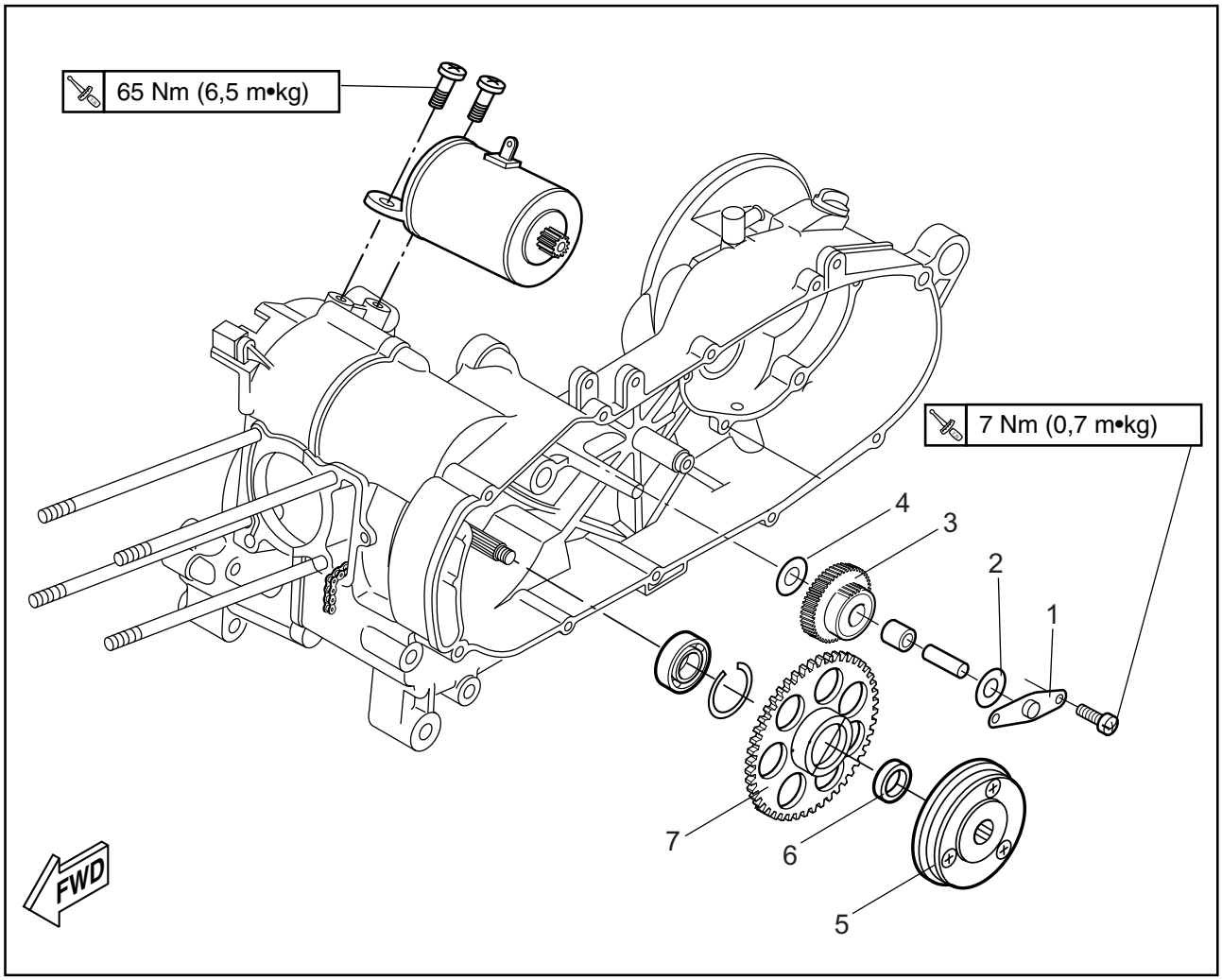
STARTER CLUTCH AND GENERATOR

MAGNETO COVER AND STATOR COIL

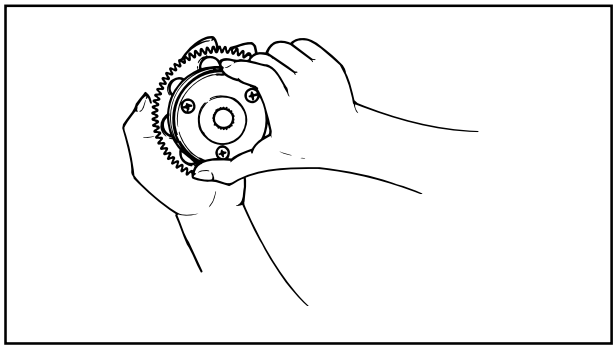


Order	Job/Part	Q'ty	Remarks
	Removing the magneto cover and stator coil		Remove the parts in the order listed.
	Side cover		Refer to "SIDE COVERS AND SEAT" section in chapter 3.
1	Flywheel lead coupler	2	
2	Flywheel cover	1	
3	Nut	1	
4	Washer	2	
5	Rotor	1	
6	Stator fixing screws	3	
7	Woodruf key	1	
8	Stator	1	
9	Pick up coil screw	2	
10	Pick up coil	1	
			For installation, reverse the removal procedure.

EASM0030
STARTER CLUTH



Order	Job/Part	Q'ty	Remarks
	Removing the starter clutch		Remove the parts in the order listed.
1	Gear retainer plane	1	
2	Washer	1	
3	Idle gear	1	
4	Washer	1	
5	Starter one way cluth	1	
6	Collar	1	
7	Starter wheel gear	1	
			For installation, reverse the removal procedure.

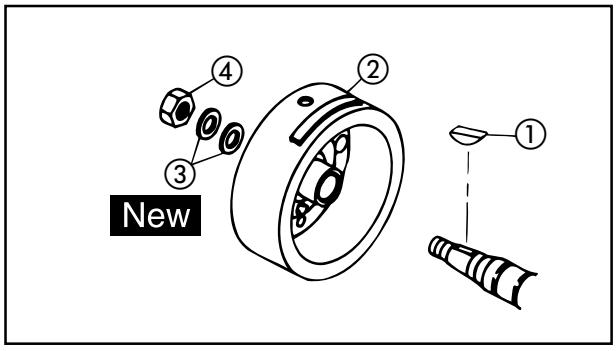


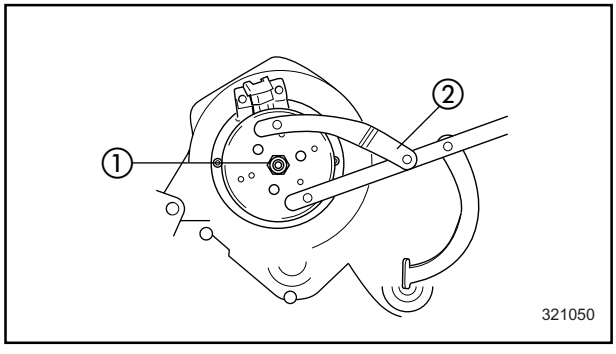
EAS00348
CHECKING THE STARTER CLUTCH
1. Check:
   - starter clutch idle gear
   - starter clutch wheel gear
   - starter one way clutch
   Chips/pitting/roughness/wear → Replace the defective part(s).
2. Check:
   - starter clutch operation

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Install the starter clutch drive gear onto the starter clutch and hold the starter clutch.
b. When turning the starter clutch drive gear counter-clockwise, the starter clutch and the starter clutch drive gear should engage, otherwise the starter clutch is faulty and must be replaced.
c. When turning the starter clutch drive gear clockwise, it should turn freely, otherwise the starter clutch is faulty and must be replaced.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲





EAS00354
INSTALLING THE GENERATOR
1. Install:
   - woodruff key ①
   - generator rotor ②
   - washers ③ New
   - generator rotor nut ④

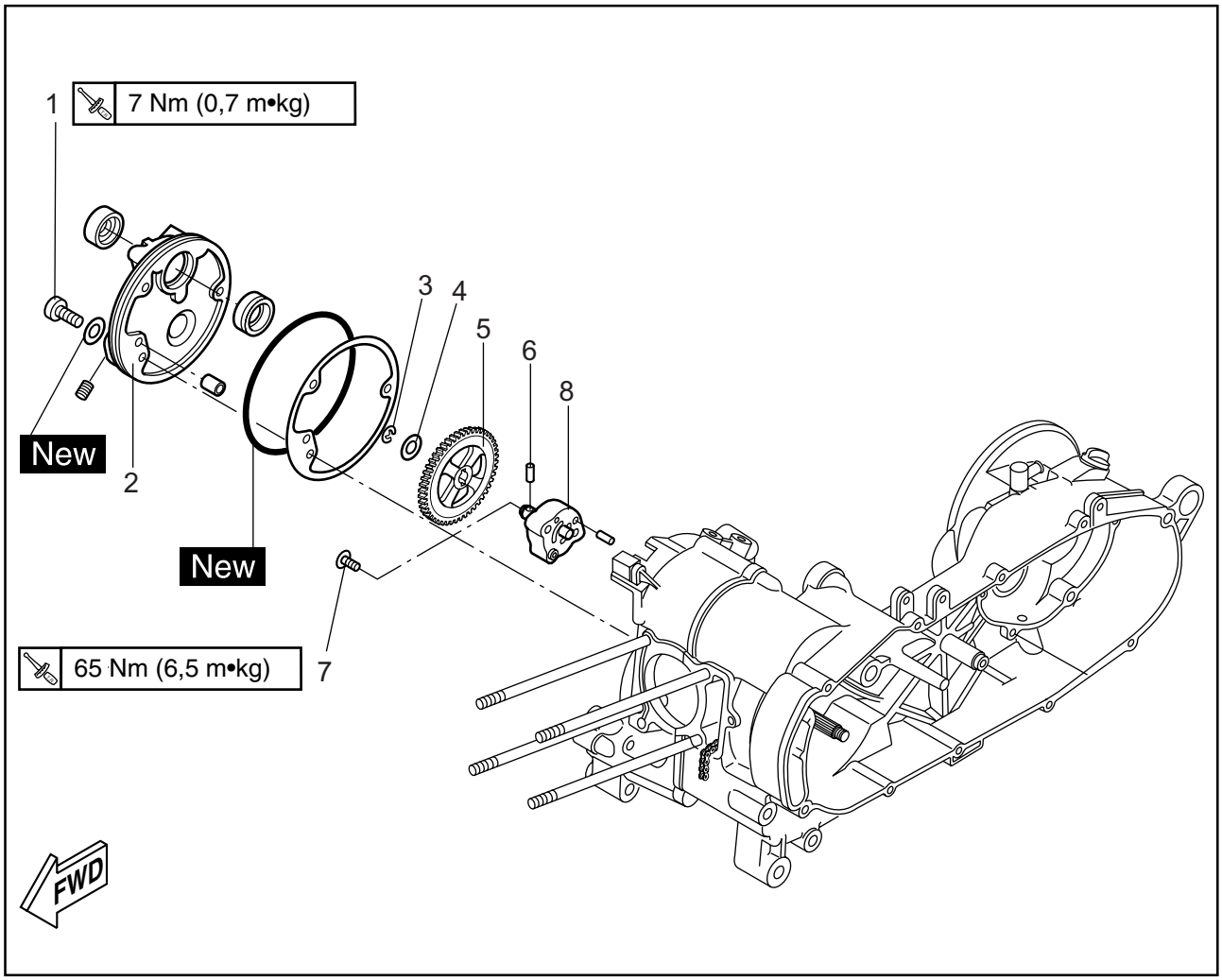
NOTE:
- Clean the tapered portion of the crankshaft and the generator rotor hub.
- When installing the generator rotor, make sure the woodruff key is properly seated in the key way of the crankshaft.

2. Tighten:
   - generator rotor nut ① **70 Nm (7.0m•kg)**

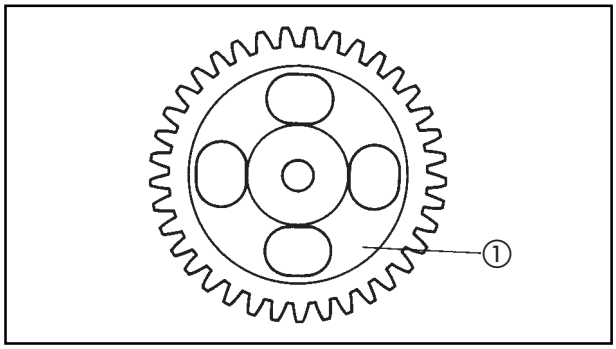
NOTE:
While holding the generator rotor with the rotor holder ②, tighten the generator rotor bolt.

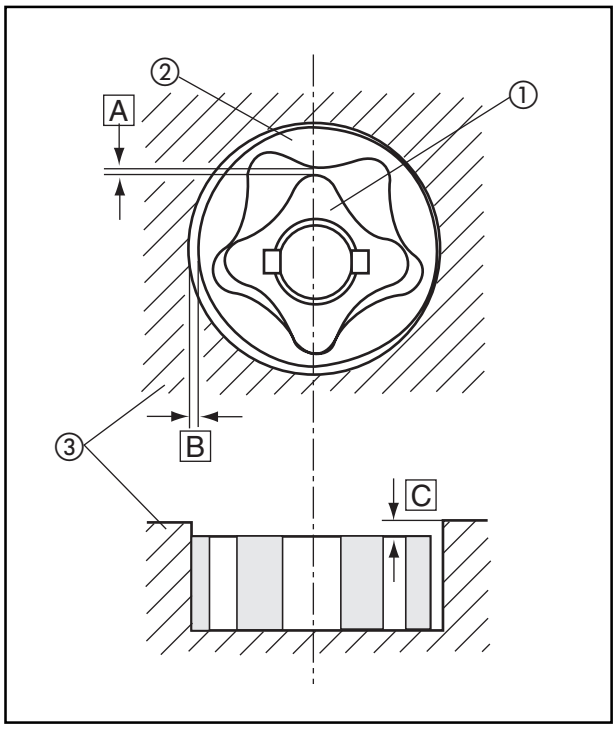
	Rotor holder **90890-01235**

EASM0031
OIL PUMP



Order	Job/Part	Q'ty	Remarks
	Removing the oil pump		Remove the parts in the order listed.
	Drain Engine oil		Refer to "CHANGING THE ENGINE OIL" section in chapter 3.
	Flywheel		Refer to "STARTER CLUTCH AND GENERATOR" section.
1	Oil pump cover fixing screws	3	
2	Oil pump cover	1	
3	Oil pump clip	1	
4	Washer	1	
5	Oil pump gear	1	
6	Oil pump gear dowel pin	1	
7	Oil pump fixing screws	2	
8	Oil pump assembly	1	
			For installation, reverse the removal procedure.





EAS00363
CHECKING THE OIL PUMP

1. Check:
   - oil pump drive gear
   - oil pump driven gear ①
   - oil pump housing
   - oil pump housing cover

   Cracks/damage/wear → Replace the defective part(-s).
2. Measure:
   - inner-rotor-to-outer-rotor-tip clearance A
   - outer-rotor-to-oil-pump-housing clearance B
   - Pump housing-to-rotors clearance C

   Out of specification → Replace the oil pump.

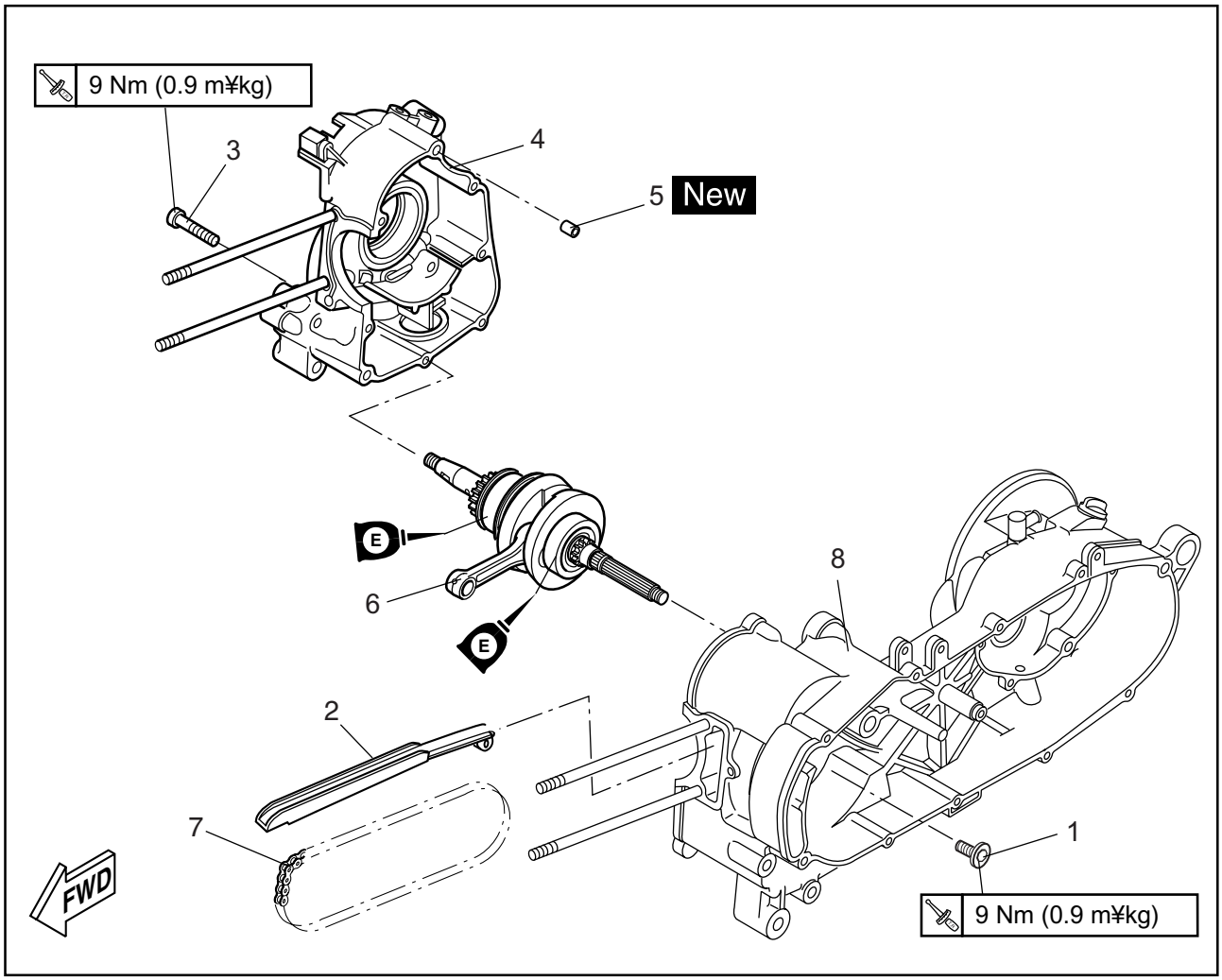
① Inner rotor
② Outer rotor
③ Oil pump housing

Inner-rotor-to-outer-rotor-tip clearance
limit: 0.15 mm
Outer-rotor-to-oil-pump-housing clearance
limit: 0.15 mm
Pump housing-to-rotors clearance
limit: 0.17 mm

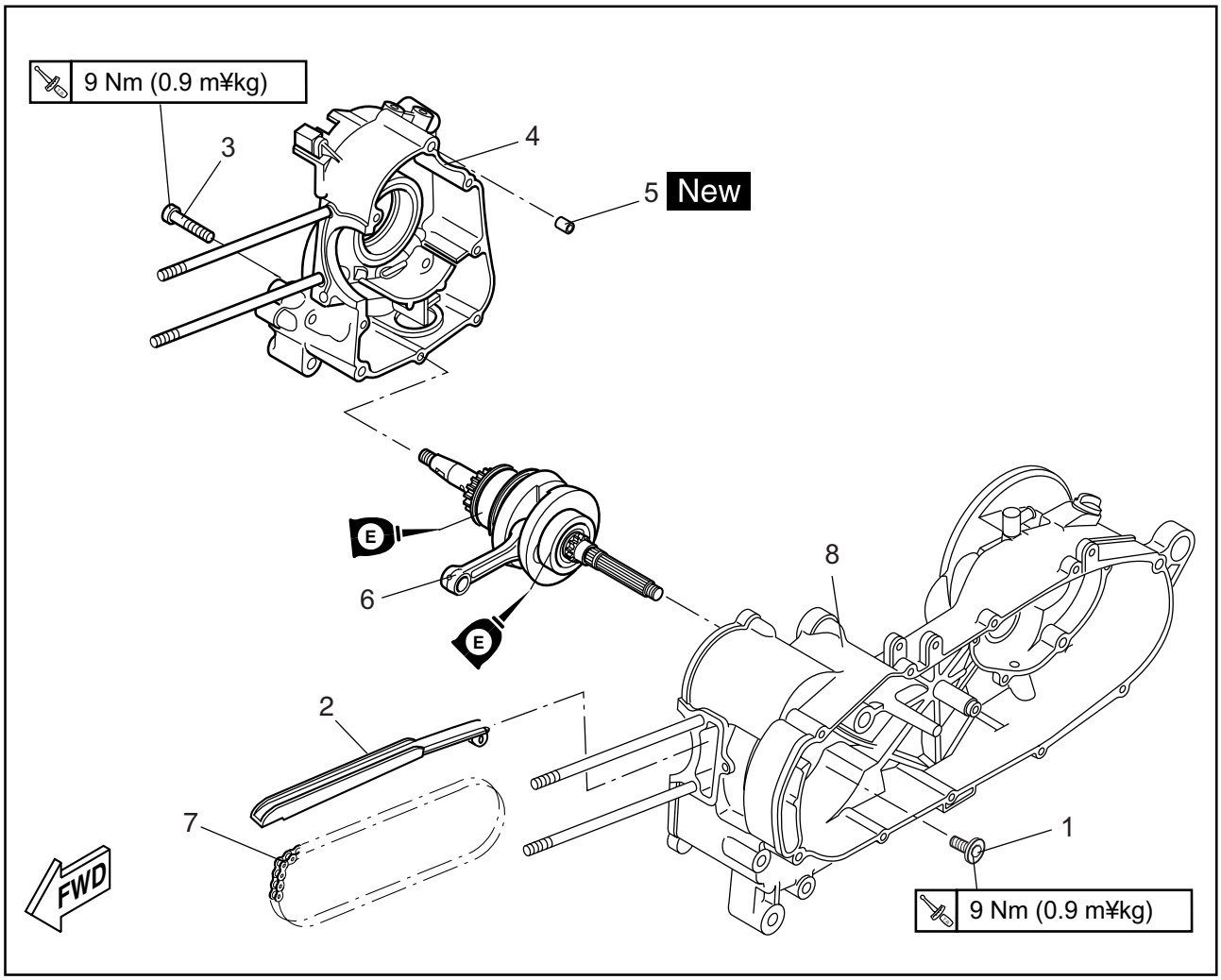
3. Check:
   - oil pump operation

   Rough movement → Replace the defective part(s).

EASM0032
CRANKCASE AND CRANKSHAFT



Order	Job/Part	Q'ty	Remarks
	Removing the crankcase and crankshaft		Remove the parts in the order listed.
	Engine		Refer to "ENGINE" section.
	Cylinder head		Refer to "CYLINDER HEAD" section.
	Cylinder and piston		Refer to "CYLINDER AND PISTON" section.
	V-belt, cluth, secondary/primary sheave		Refer to "V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE" section.
	CDI magneto		Refer to "STARTER CLUTCH AND GENERATOR" section.
	Oil pump		Refer to "OIL PUMP" section.
	Water pump		Refer to "WATER PUMP" section in chapter 5.
	Rear wheel		Refer to "REAR WHEEL AND BRAKE" section in chapter 7.



Order	Job/Part	Q'ty	Remarks
1	Bolt	1	
2	Timing chain guide	1	
3	Screws	8	
4	Crankcase (right)	1	Refer to "INSTALLING THE CRANKSHAFT AND STARTER CLUTCH" section.
5	Dowel pin	2	
6	Crankshaft assembly	1	
7	Timing chain	1	
8	Crankcase (left)	1	For installation, reverse the removal procedure.

EAS00385
DISASSEMBLING THE CRANKCASE

1. Remove:
   • crankcase bolts

NOTE:
Loosen each bolt 1/4 of a turn at a time, in stages and in a crisscross pattern. After all of the bolts are fully loosened, remove them.

2. Remove:
   • right crankcase

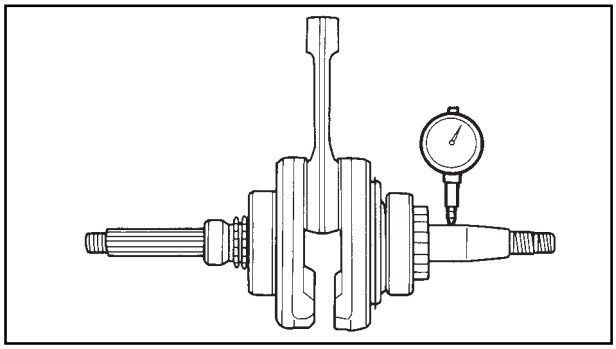
CAUTION:
Tap on one side of the crankcase with a soft-face hammer. Tap only on reinforced portions of the crankcase, not on the crankcase mating surfaces. Work slowly and carefully and make sure the crankcase halves separate evenly.

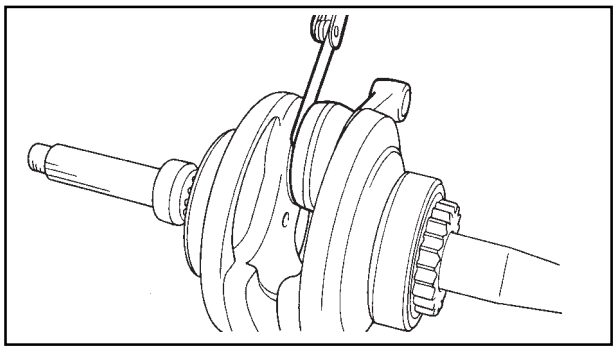
3. Remove:
   • timing chain from crankshaft sprocket

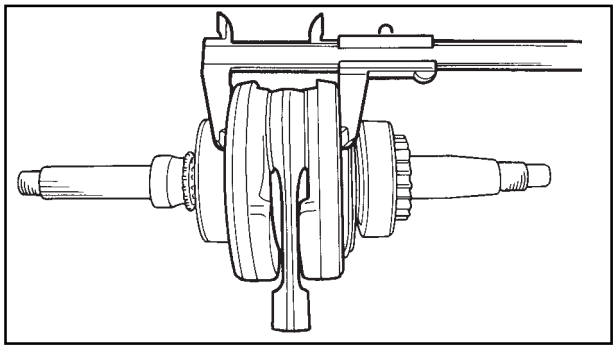
EAS00388
REMOVING THE CRANKSHAFT ASSEMBLY

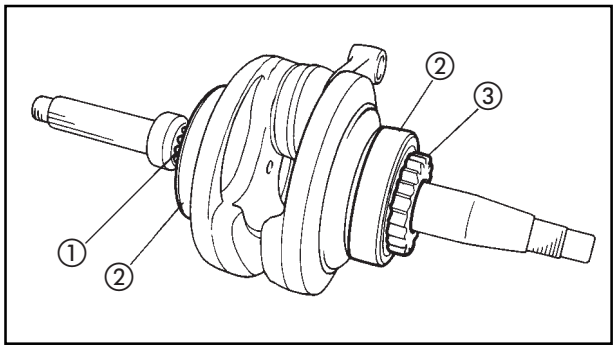
1. Remove:
   • crankshaft assembly

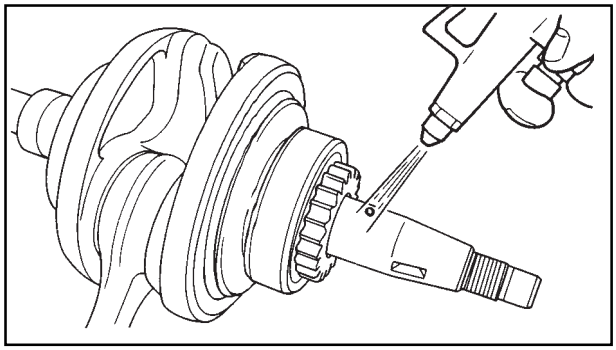
CAUTION:
Tap on one side of the crankshaft with a soft-face hammer. Work slowly and carefully and make sure the crankshaft separate evenly from the crankcase.











EAS00394
CHECKING THE CRANKSHAFT AND CONNECTING ROD

1. Measure:
   • crankshaft runout
   Out of specification → Replace the crankshaft, bearing or both.

NOTE:
Turn the crankshaft slowly.

Maximum crankshaft runout
0.03 mm

2. Measure:
   • big end side clearance
   Out of specification → Replace the crankshaft.

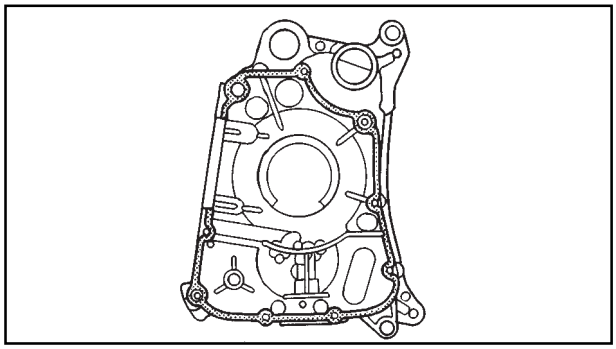
Big end side clearance
0.15 ~ 0.45 mm

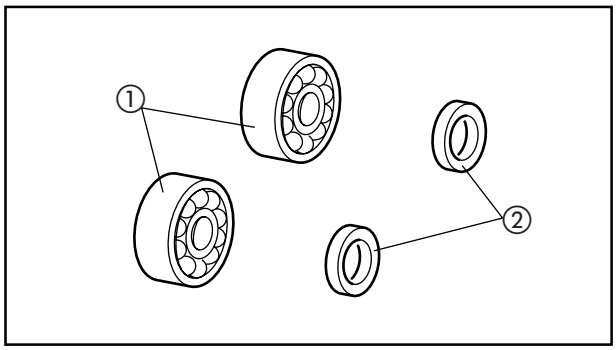
3. Measure:
   • crankshaft width
   Out of specification → Replace the crankshaft.

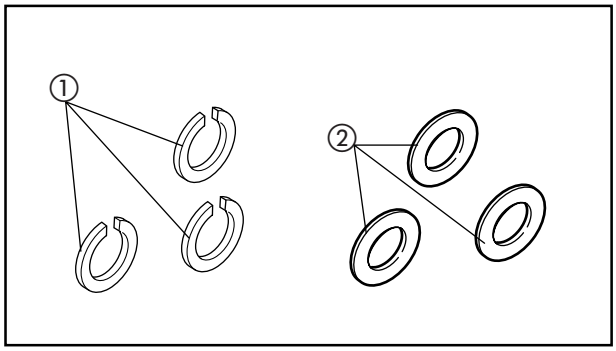
Crankshaft width
47.95 ~ 48.00 mm

4. Check:
   • crankshaft sprocket ①
   Damage/wear → Replace the crankshaft.
   • bearing ②
   Cracks/damage/wear → Replace the crankshaft.
   • oil pump drive gear ③
   Damage/wear → Replace the crankshaft.

5. Check:
   • crankshaft journal
   Scratches/wear → Replace the crankshaft.
   • crankshaft journal oil passage
   Obstruction → Blow out with compressed air.







EAS00399
CHECKING THE CRANKCASE
1. Thoroughly wash the crankcase halves in a mild solvent.
2. Thoroughly clean all the gasket surfaces and crankcase mating surfaces.
3. Check:
   - crankcase
     Cracks/damage → Replace.
   - oil delivery passages
     Obstruction → Blow out with compressed air.

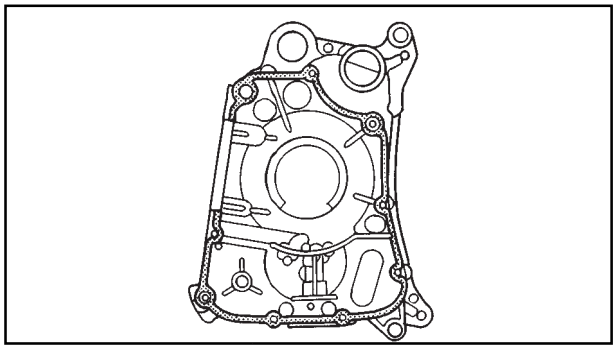
EAS00401
CHECKING THE BEARINGS AND OIL SEALS
1. Check:
   - bearings ①
     Clean and lubricate the bearings, then rotate the inner race with your finger.
     Rough movement → Replace.
2. Check:
   - oil seals ②
     Damage/wear → Replace.

EAS00402
CHECKING THE CIRCLIPS AND WASHERS
1. Check:
   - circlips ①
     Bends/damage/looseness → Replace.
   - washers ②
     Bends/damage → Replace.

EAS00408
INSTALLING THE CRANKSHAFT
1. Install:
   - crankshaft assembly
   - timing chain

CAUTION:

To avoid scratching the crankshaft and to ease the installation procedure, apply arease onto the oil seal lips and apply engine oil onto each bearing.



EAS00416
ASSEMBLING THE CRANKCASE

1. Apply:
   • sealant
   (onto the crankcase mating surfaces)

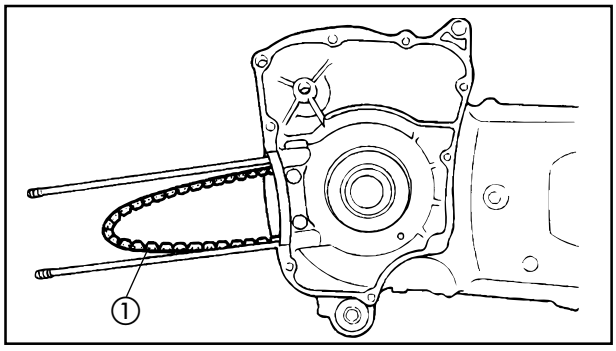
	Yamaha bond No. 1215 **90890-85505**

NOTE:
Do not allow any sealant to come into contact with the oil gallery.

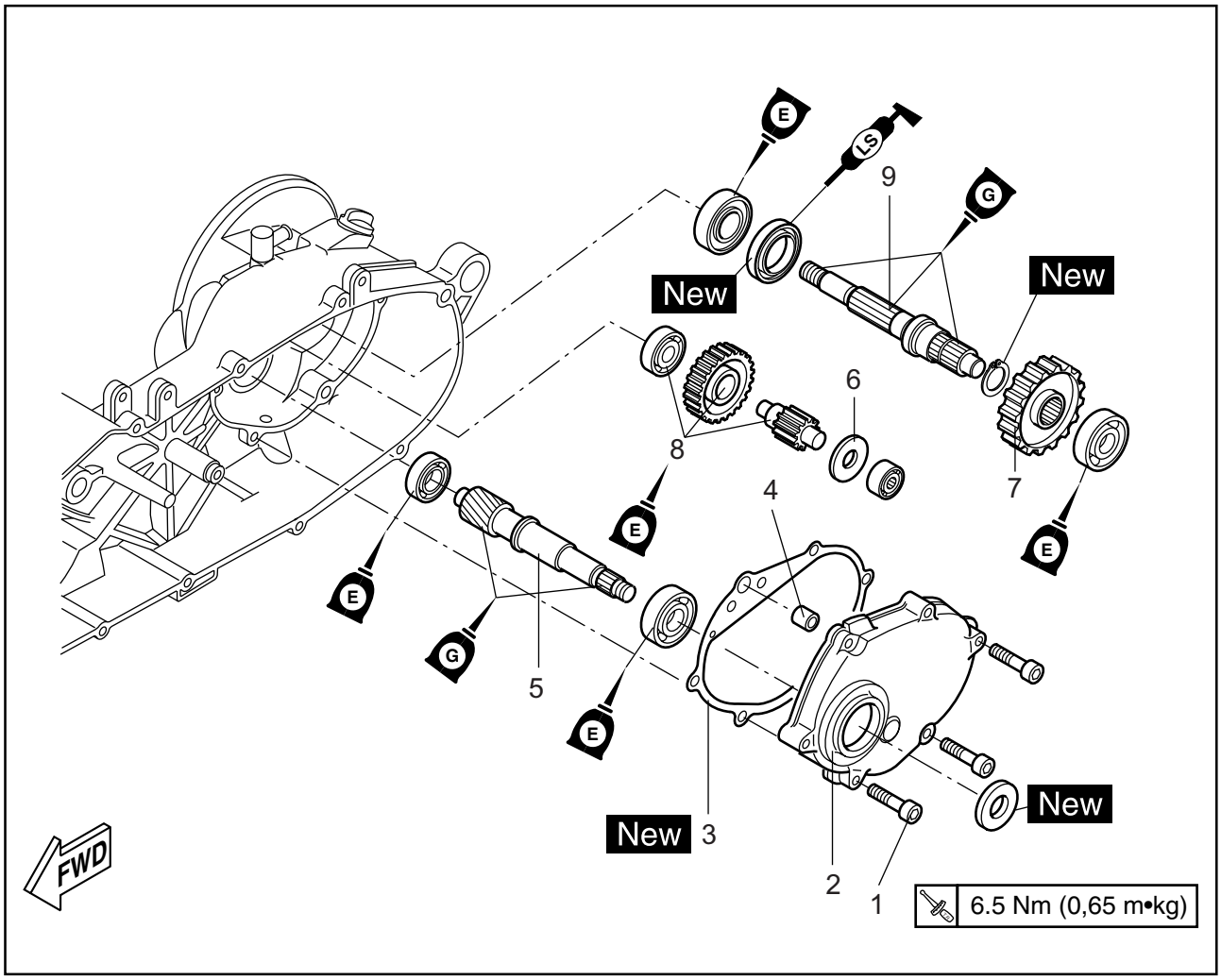
2. Install:
   • dowel pins
3. Install:
   • crankshaft
4. Install:
   • timing chain
5. Install:
   • left crankcase
   (onto the right crankcase)

NOTE:
Tap lightly on the left crankcase with a soft-face hammer.

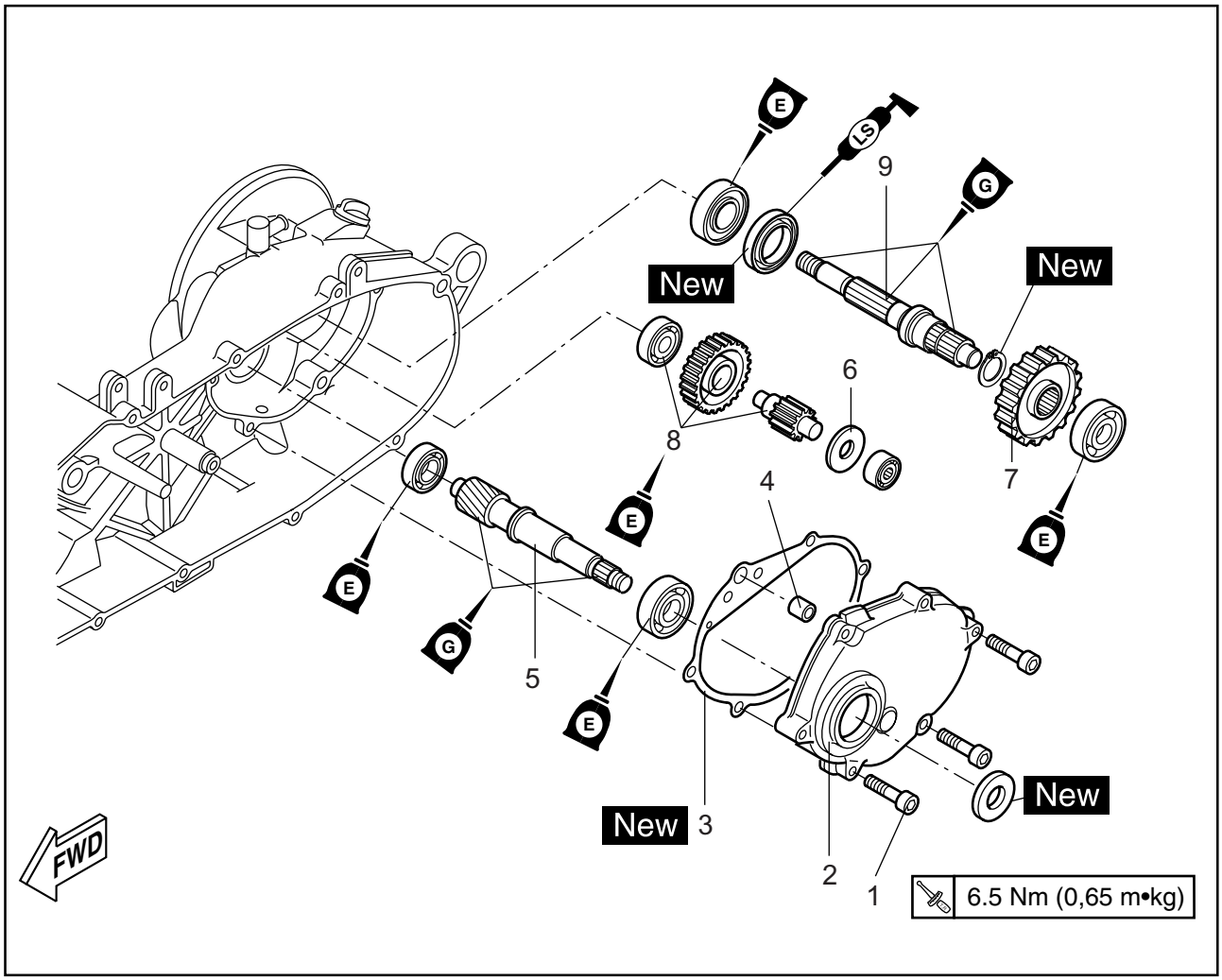
6. Install:
   • crankcase bolts **9 Nm (0.9m•kg)**
7. Apply:
   • engine oil
   (onto the crankshaft bearings, conrod and crank pin)
8. Check:
   • crankshaft operation
   Rough movement → Repair.
   • timing chain position ①



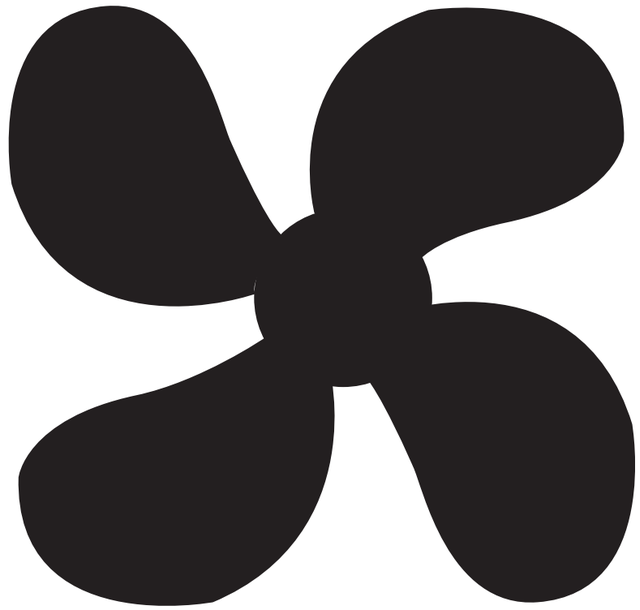
EASM0033
TRANSMISSION



Order	Job/Part	Q'ty	Remarks
	Removing the transmission		Remove the parts in the order listed.
	Rear wheel		Refer to "REAR WHEEL AND BRAKE" section in chapter 7.
	Crankcase cover (left)		Refer to "V-BELT, CLUTH AND SECONDARY/PRIMARY SHEAVE" section.
	Drain the transmission oil		Refer to "TRANSMISSON OIL REPLACEMENT" section in chapter 3.
1	Transmission cover screws	6	
2	Transmission case cover	1	
3	Gasket	1	
4	Dowel pin	2	Refer to "INSTALLING THE CRANK-SHAFT AND STARTER CLUTCH" section.
5	Primary drive gear	1	
6	Plain washer	1	
7	Secondary drive gear axle	1	



Order	Job/Part	Q'ty	Remarks
8	Idle gear	1	
9	Main axle	1	
			For installation, reverse the removal procedure.



COOL 5

CHAPTER 5.
COOLING SYSTEM

RADIATOR 5-1
CHECKING THE RADIATOR 5-3
INSTALLING THE RADIATOR 5-3

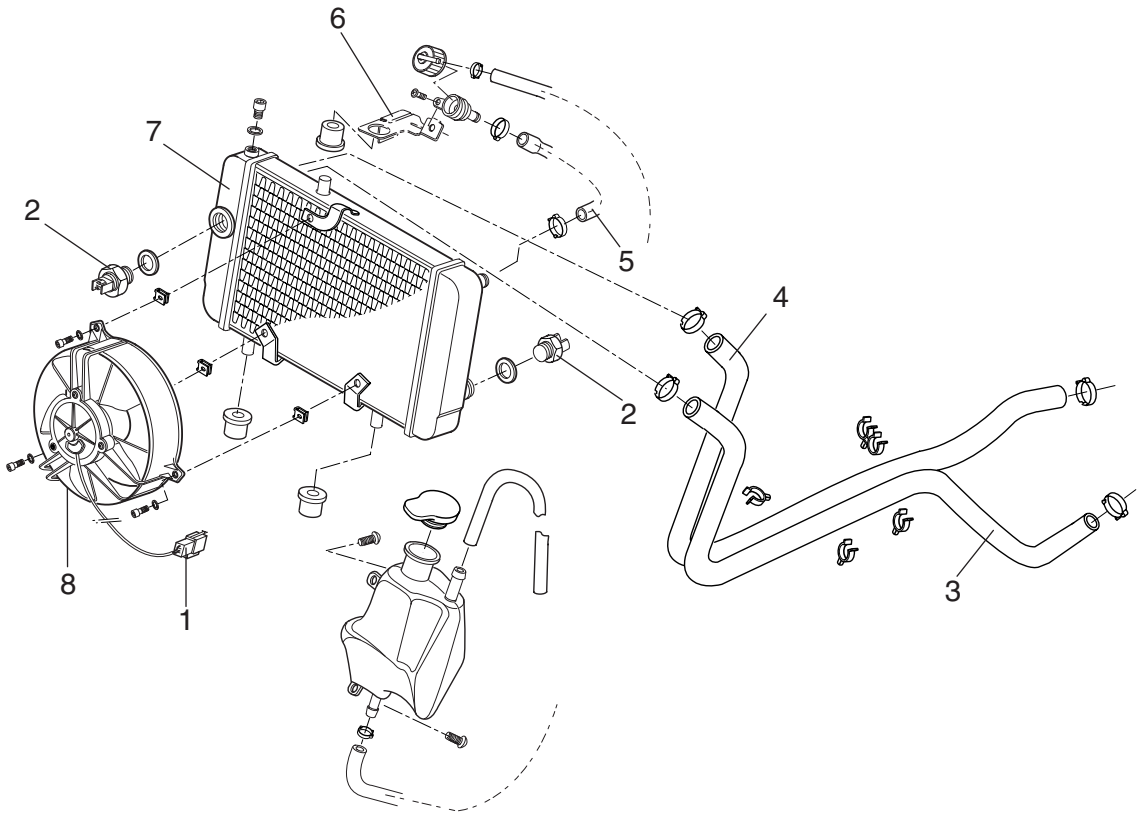
THERMOSTAT 5-4
CHECKING THE THERMOSTAT 5-5
INSTALLING THE THERMOSTAT 5-5

WATER PUMP 5-6
CHECKING THE WATER PUMP 5-7
INSTALLING THE WATER PUMP 5-7

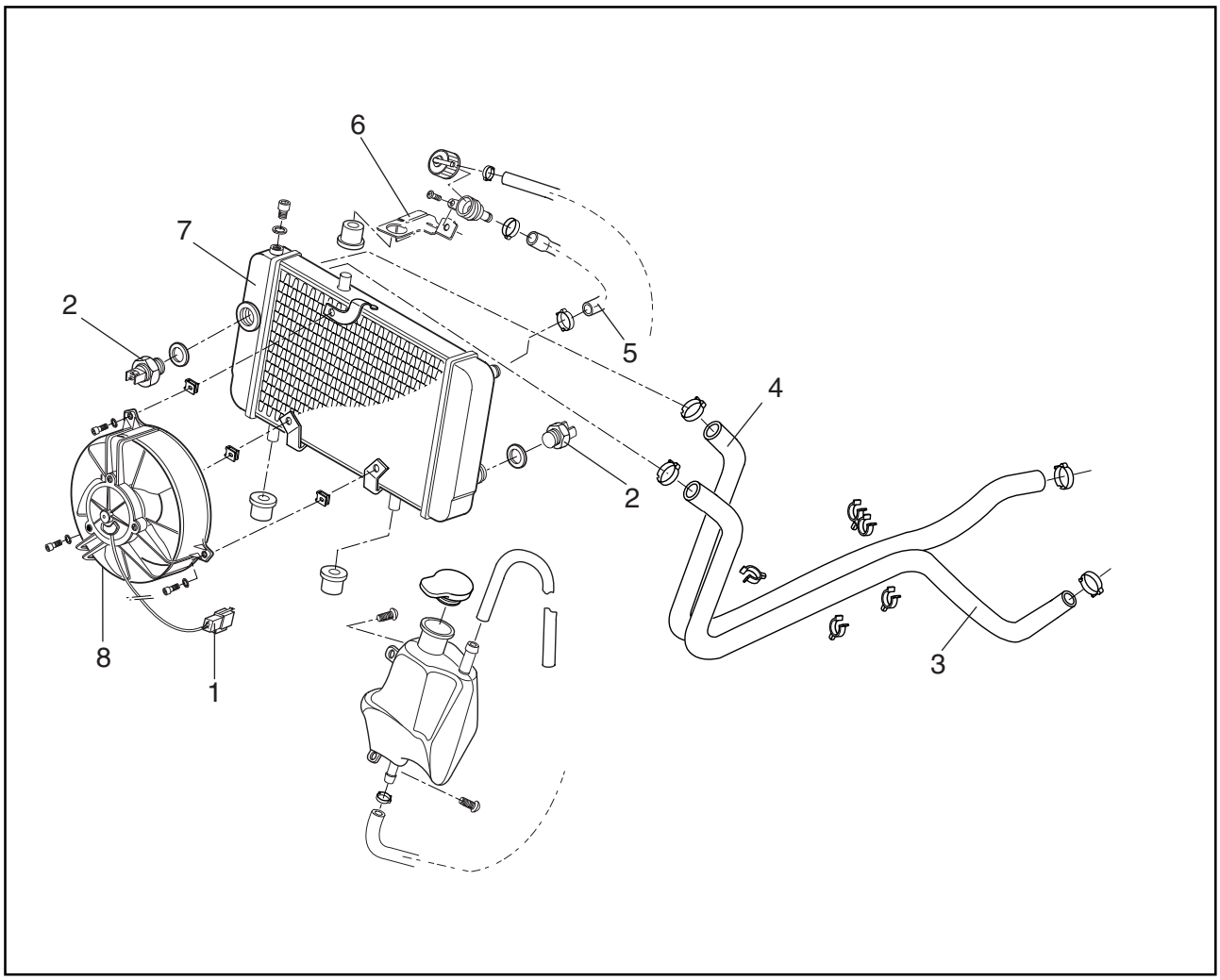
EASM0034

COOLING SYSTEM

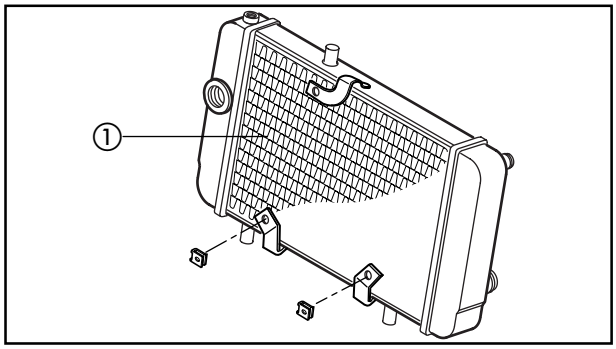
RADIATOR

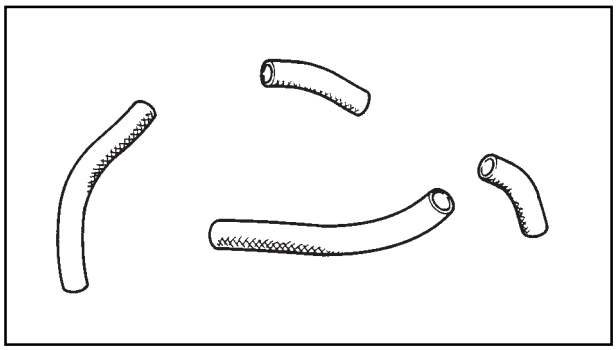


Order	Job/Part	Q'ty	Remarks
	Drain coolant		Refer to "CHANGING THE COOLANT" section in chapter 3.
	Front cover		Refer to "FRONT COVER, INNER PANEL AND INNER FRONT COVER" section in chapter 3.
	Footrest board		Refer to "FOOTREST BOARD AND UNDER COVER" section in chapter 3.
I	Disconnet:		
1	Fan motor coupler	1	
2	Thermo switch connectors	4	
II	Unplug:		
3	Radiator outlet hose	1	
4	Radiator inlet hose	1	
5	Radiator filler hose	1	
III	Untight:		
6	Radiator bracket (frame)	1	



Order	Job/Part	Q'ty	Remarks
IV	Remove:		**NOTE:**
7	Radiator	1	Avoid the radiator of falling
8	Radiator fan	1	
			For installation, reverse the removal procedure.





EAS00455
CHECKING THE RADIATOR

1. Check:
   • radiator fins ①
   Obstruction → Clean.
   Apply compressed air to the rear of the radiator.
   Damage → Repair or replace.

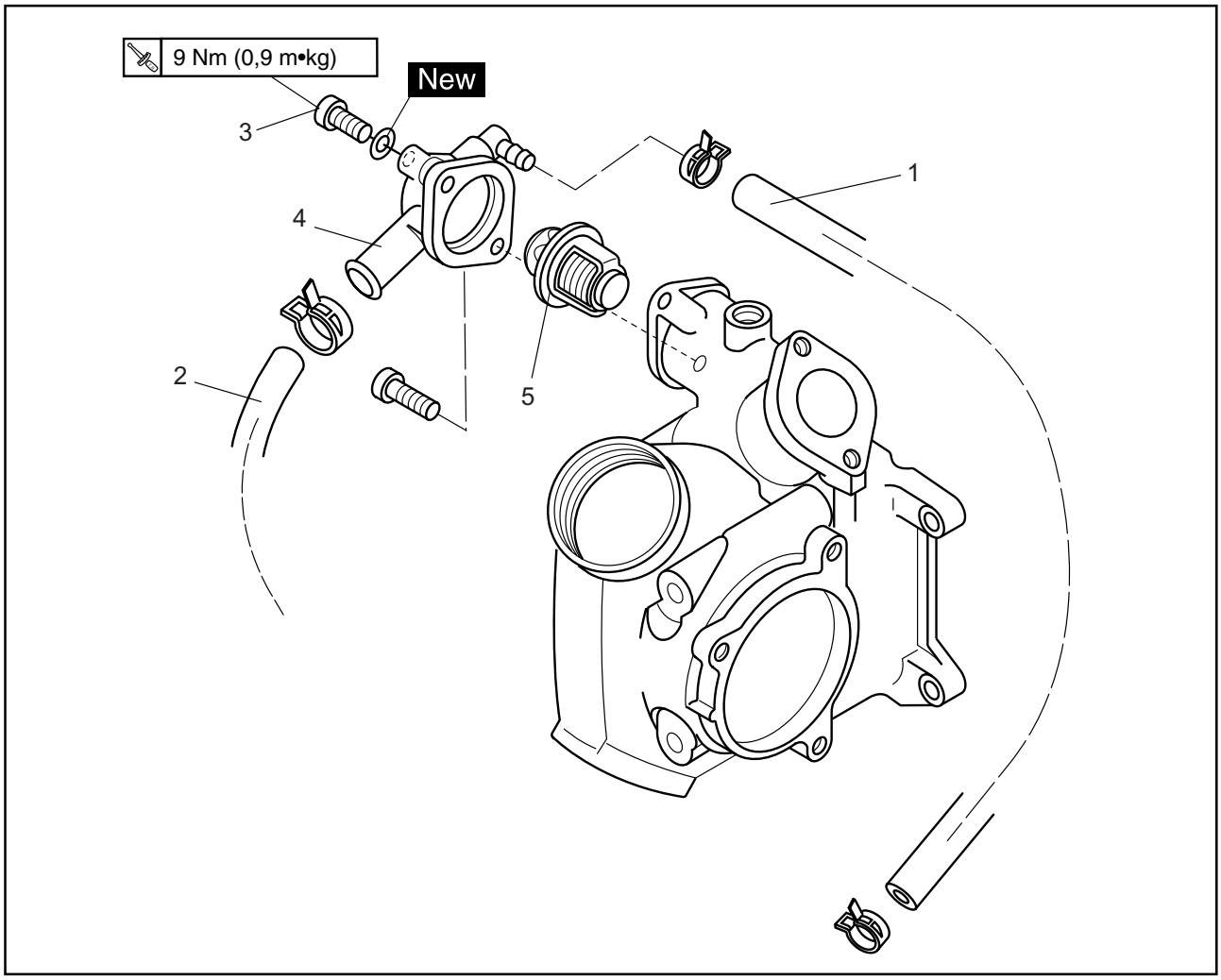
NOTE:
Straighten any flattened fins with a thin, flat-head screwdriver.

2. Check:
   • radiator hoses
   • radiator pipes
   Crack/damage → Replace.
3. Check:
   • radiator cap
   Cracks/damage → Replace.
4. Check:
   • radiator fan
   Damage → Replace.
   Malfunction → Check and repair.
   Refer to “COOLING SYSTEM” section in chapter 8.

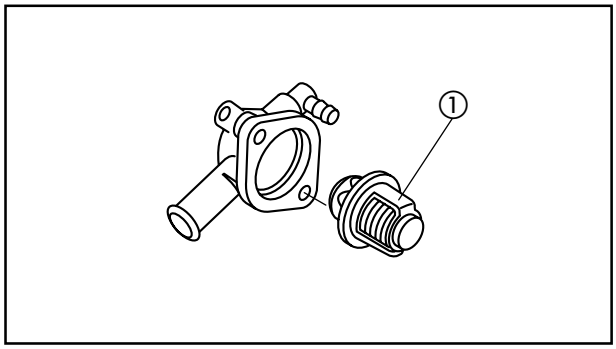
EAS00456
INSTALLING THE RADIATOR

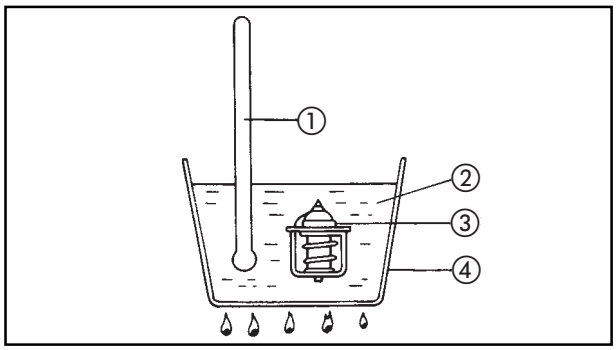
1. Fill:
   • cooling system
   (with the specified amount of the recommended coolant)
   Refer to “CHANGING THE COOLANT” section in chapter 3.
2. Check:
   • cooling system
   Leaks → Repair or replace any faulty part.

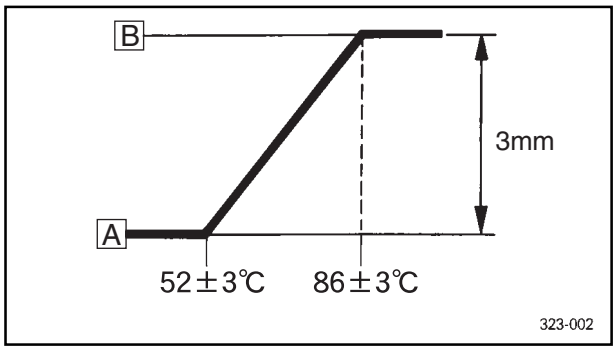
EASM0036
THERMOSTAT

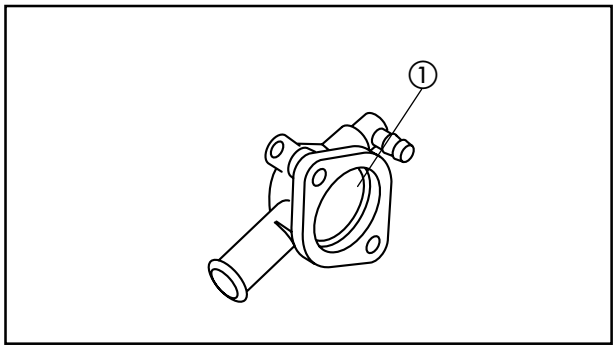


Order	Job/Part	Q'ty	Remarks
	Removing the thermostat		Remove the parts in the order listed.
	Drain coolant		Refer to "CHANGING COOLANT" section in chapter 3.
	Box		Refer to "SIDE COVERS AND SEAT" section in chapter 3.
1	Hose	1	
2	Cylinder head outlet hose	1	
3	Thermostat cover fixing screws	2	
4	Thermostat cover	1	
5	Thermostat	1	
			For installation, reverse the removal procedure.









EAS00462
CHECKING THE THERMOSTAT

1. Check:
   • thermostat ①
   Does not open at 80.5 ~ 83.5°C → Replace.

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Suspend the thermostat in a container filled with water.
b. Slowly heat the water.
c. Place a thermometer in the water.
d. While stirring the water, observe the thermostat and thermometer's indicated temperature.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

① Thermometer
② Water
③ Thermostat
④ Container
A Fully closed
B Fully open

NOTE:

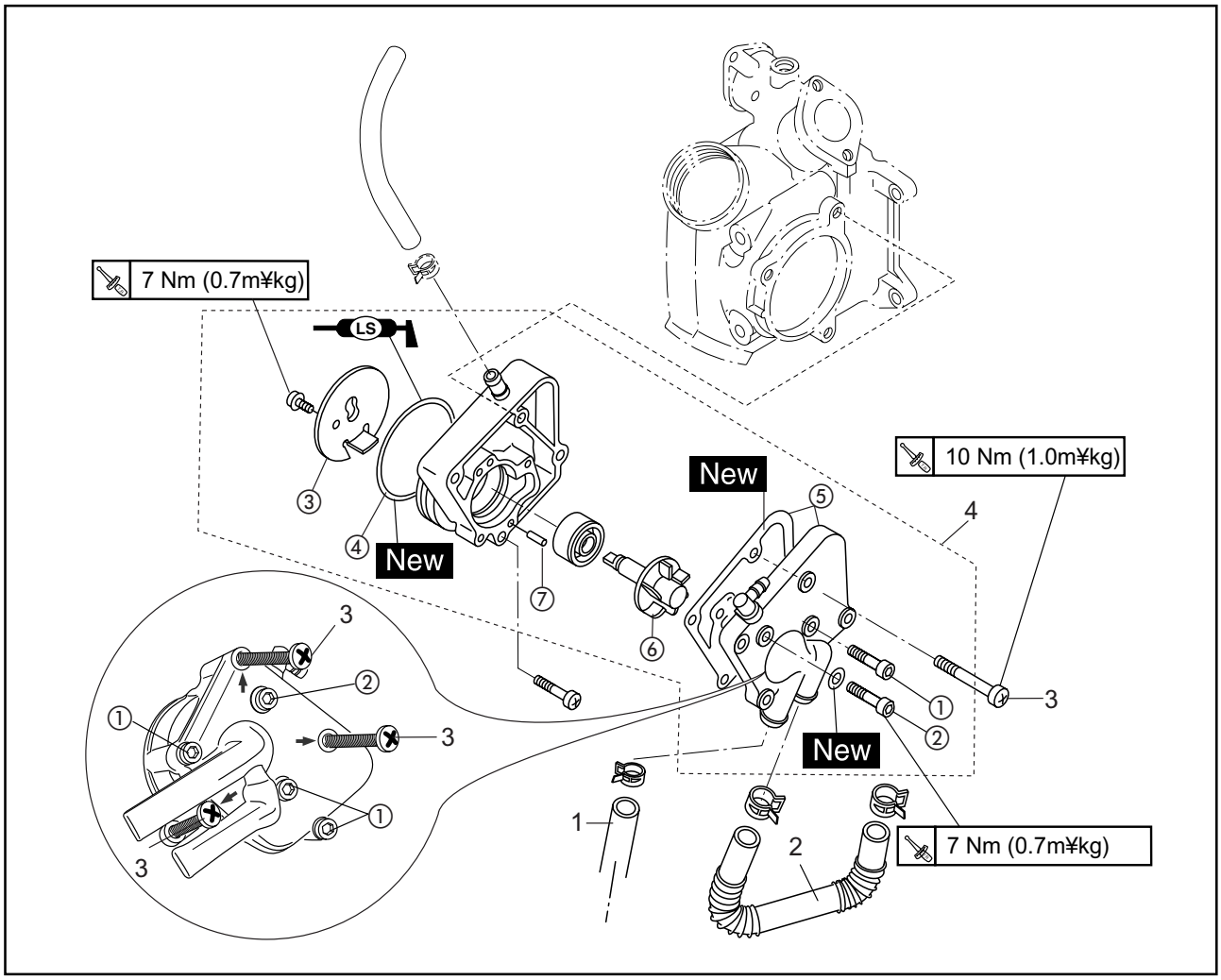
If the accuracy of the thermostat is in doubt, replace it. A faulty thermostat could cause serious overheating or overcooling.

2. Check:
   • thermostat housing cover ①
   • thermostat housing
   Cracks/damage → Replace.

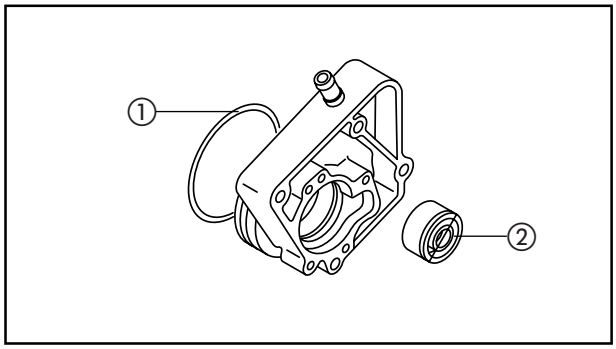
EASM0037
INSTALLING THE THERMOSTAT

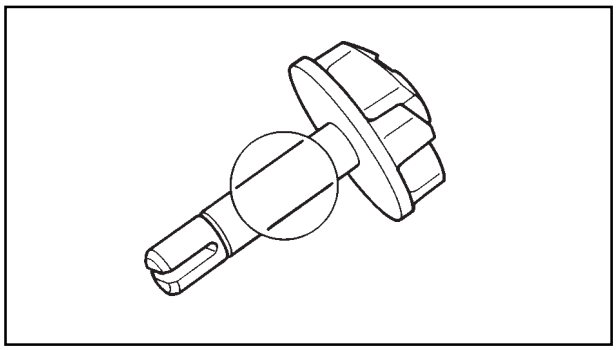
1. Install:
   • thermostat
   • thermostat cover
   • hoses

EASM0035
WATER PUMP



Order	Job/Part	Q'ty	Remarks
	Removing the water pump Drain coolant		Remove the parts in the order listed. Refer to "CHANGING THE COOLANT" section in chapter 3.
1	Pump inlet hose	1	
2	Pump outlet hose	1	
3	Water pump fixing screws	3	**NOTE:**
4	Water pump assembly	1	Follow the arrows
	Disassembling water pump		
①	Water pump mounting screws	4	
②	Bleed screw with copper washer	1/1	
③	Water pump inner cover	1	
④	O-ring	1	
⑤	Water pump cover/gasket	1/1	
⑥	Impeller shaft	1	
⑦	Dowel pin	1	
			For installation, reverse the removal procedure.



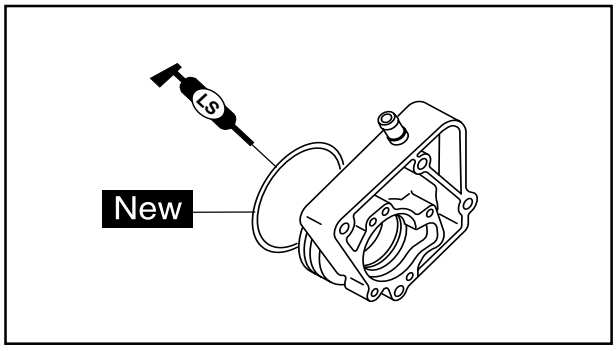


EAS00472
CHECKING THE WATER PUMP

1. Check:
   - O-ring ①
     Damage/wear → Replace.
   - oil seal ②
     Damage/wear → Replace the water pump housing assembly.

NOTE:
The mark "water side" on the oil seal should be installed outward.

2. Check:
   - impeller
     Cracks/damage/wear → Replace the water pump housing assembly.
   - water pump housing
     Cracks/damage → Replace the water pump housing assembly.



EAS00477
INSTALLING THE WATER PUMP

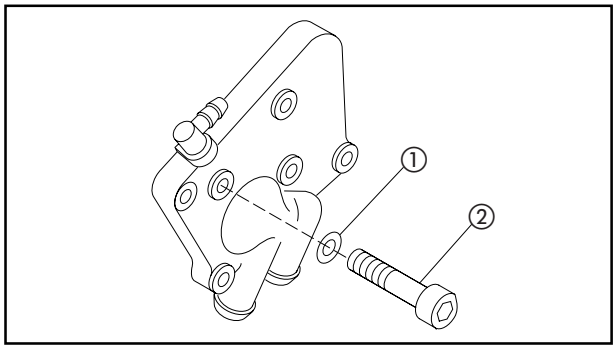
NOTE:
Always replace the entire water pump assembly.

1. Install:
   - impeller
   - water pump inner cover
   - screw **7 Nm (0.7m•kg)**

NOTE:
After installation, check that the impeller shaft rotates smoothly.

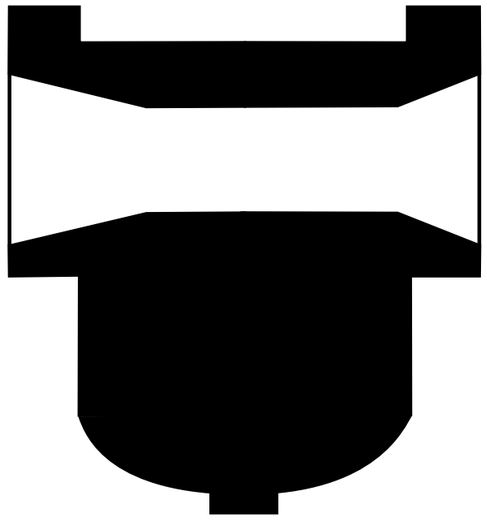
2. Install:
   - O-ring New

NOTE:
Lubricate the O-ring with a thin coat of lithium soap base grease.



3. Install:
   - dowel pin
   - gasket New
   - water pump housing cover
   - screws 7 Nm (0.7m•kg)
   - copper washer ① New
   - bleed screw ② 7 Nm (0.7m•kg)

NOTE:
Do not forget to install the copper washer on the bleed screw.



CARB 6

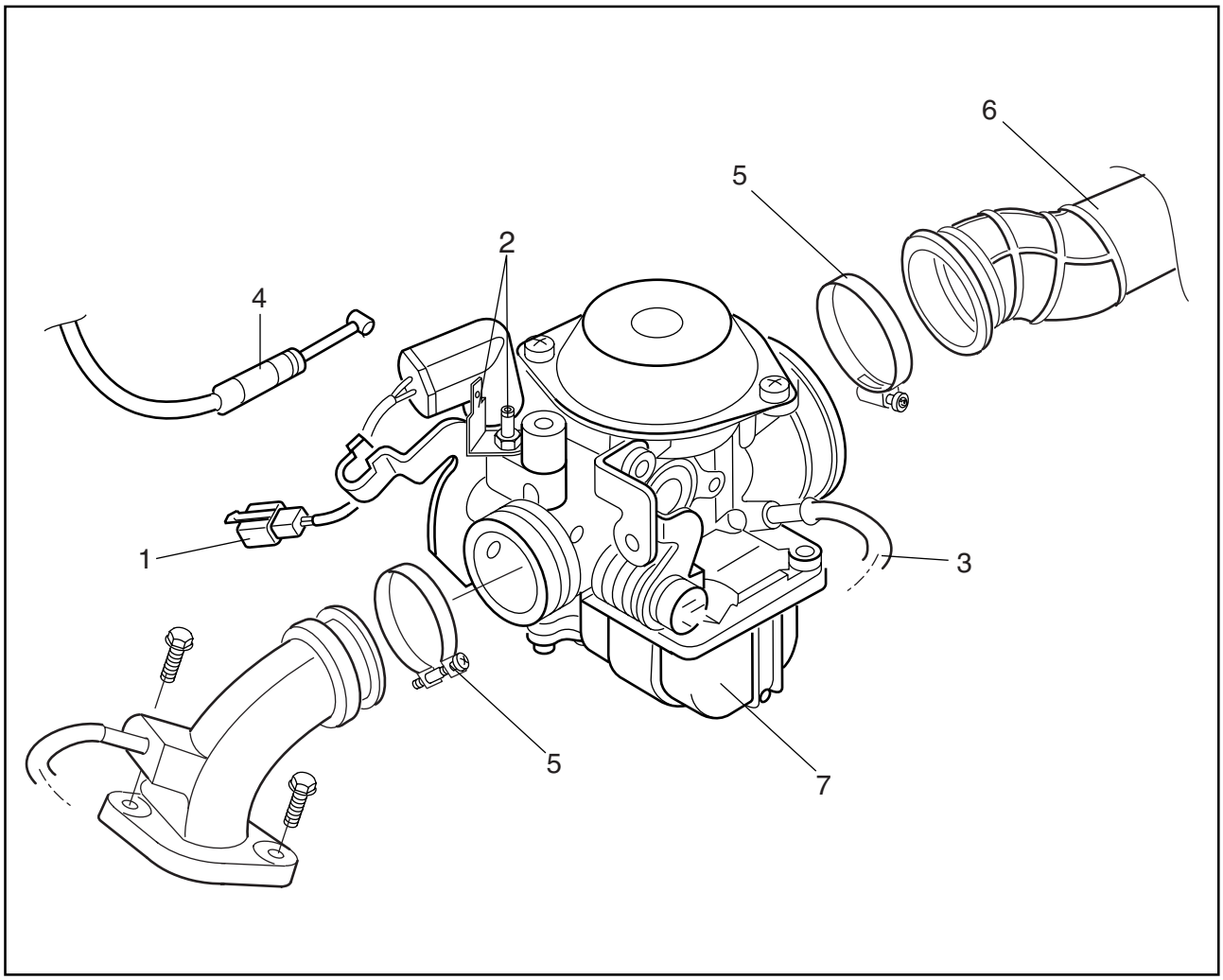
CHAPTER 6.
CARBURETOR

CARBURETOR 6-1
CARBURETOR REMOVAL 6-1
CARBURETOR DISASSEMBLY 6-2
CHECKING THE CARBURETOR 6-3
ASSEMBLING THE CARBURETOR 6-5
MEASURING AND ADJUSTING THE FUEL LEVEL 6-6
CHECKING THE AUTOCHOKE UNIT 6-6
CHECKING THE FUEL COOK 6-7

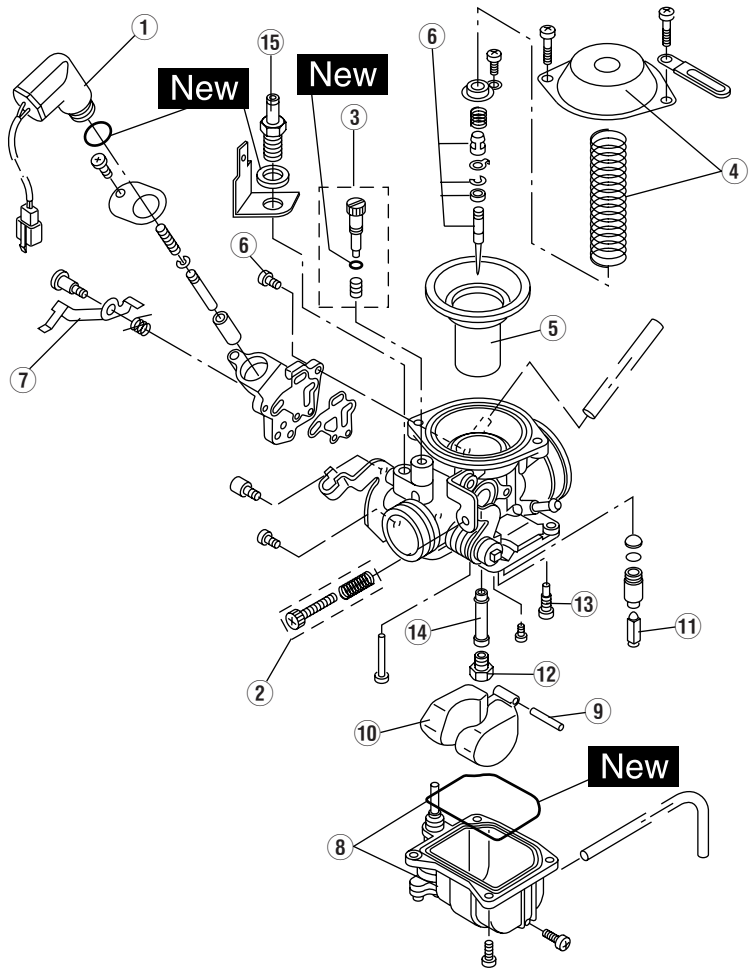
EASM0038

CARBURETOR

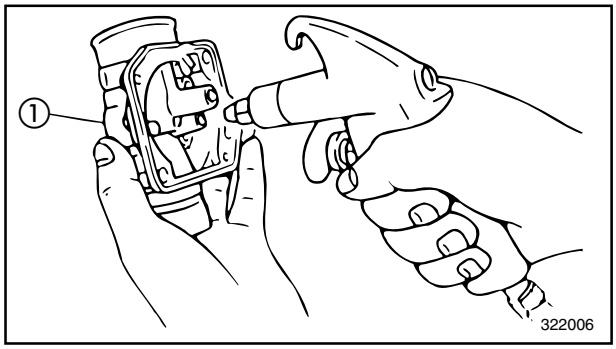
CARBURETOR



Order	Job/Part	Q'ty	Remarks
	Removing the carburetor		Remove the parts in the order listed.
	Side cover Fuel tank Box		Refer to "SIDE COVERS AND SEAT" in chapter section 3.
I	Disconnect:		
1	Auto choke coupler	1	
2	Carburetor heater connectors	2	
II	Unplug:		
3	Fuel hose	1	
III	Remove:		
4	Throttle cable	1	
5	Fixing clip	2	**CAUTION:**
6	Air duct	1	**Do not bend the air filter joint clamp**
7	Carburetor assembly	1	**when installing the carburetor.**
			For installation, reverse the removal procedure.



Order	Job/Part	Q'ty	Remarks
	Carburetor disassembly		Remove the parts in the order listed.
①	Auto choke unit	1	
②	Throttle stop screw set	1	
③	Pilot screw set	1	
④	Diaphragm cover/spring	1/1	
⑤	Throttle valve	1	
⑥	Needle set	1	
⑦	Accelerating pump lever	1	
⑧	Float chamber/gasket	1/1	**NOTE:**
⑨	Float axle	1/1	Remove the float pin from the side of the arrow.
⑩	Float	1	
⑪	Needle jet	1	
⑫	Main jet	1	
⑬	Pilot jet	1	
⑭	Main nozzle	1	
⑮	Heater assembly	1	For assembly, reverse the disassembly procedure.



EAS00485
CHECKING THE CARBURETOR

1. Check:
   - carburetor body ①
   - float chamber
   - jet housing

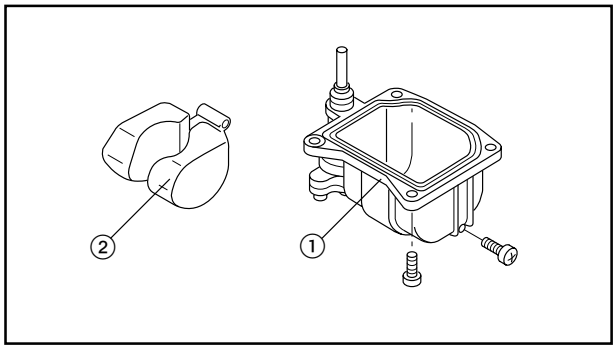
   Cracks/damage → Replace.
2. Check:
   - fuel passages

   Obstruction → Clean.

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Wash the carburetor in a petroleum-based solvent. Do not use any caustic carburetor cleaning solution.
b. Blow out all of the passages and jets with compressed air.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲



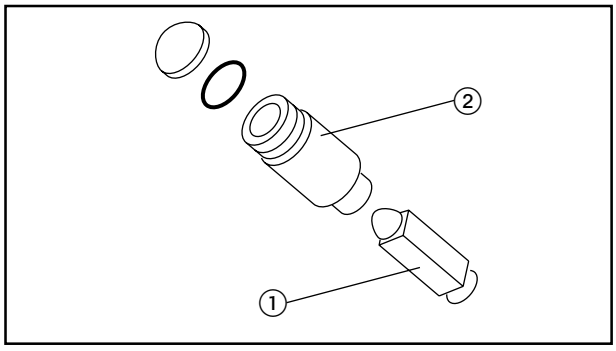
3. Check:
   - float chamber body ①

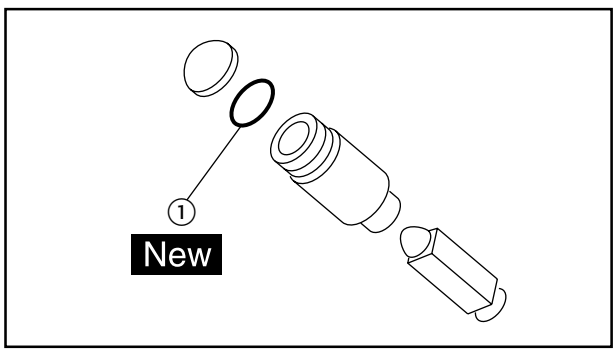
   Dirt → Clean.
4. Check:
   - float chamber rubber gasket

   Cracks/damage/wear → Replace.
5. Check:
   - float ②

   Damage → Replace.
6. Check:
   - needle valve ①
   - needle valve seat ②

   Damage/obstruction/wear → Replace the needle valve, needle valve seat and O-ring as a set.





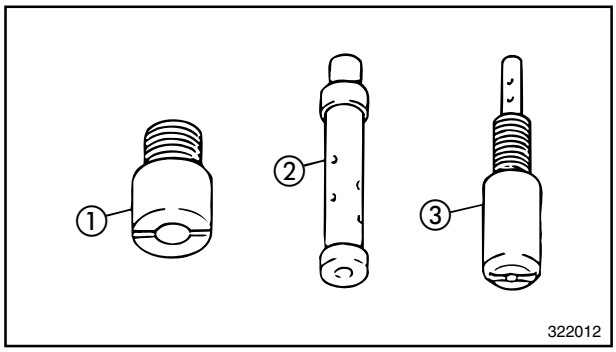
7. Check:
   - o-ring ① New

   Damage/wear → Replace the needle valve, needle valve seat and o-ring as a set.
8. Check:
   - piston valve

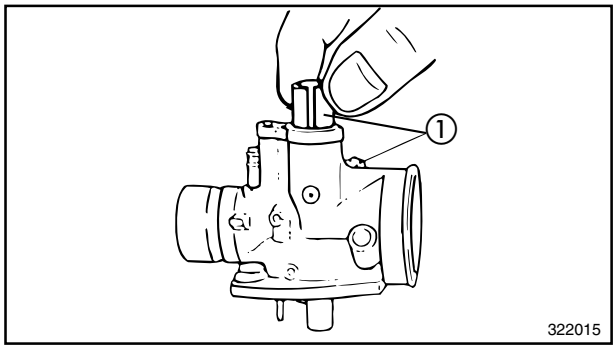
   Damage/scratches/wear → Replace.
   - Piston valve diaphragm

   Cracks/Tears → Replace.

9. Check:
   • vacuum chamber cover
   • piston valve spring
   • jet needle holder
   Cracks/damage → Replace.



10. Check:
   • jet needle kit
   • main jet ①
   • needle jet ②
   • pilot jet ③
   • pilot screw
   Bends/damage/wear → Replace.
   Obstruction → Replace.

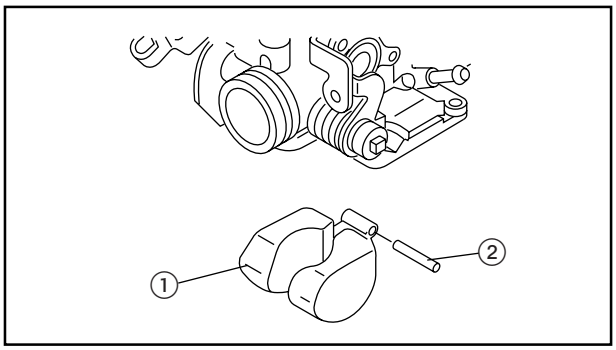


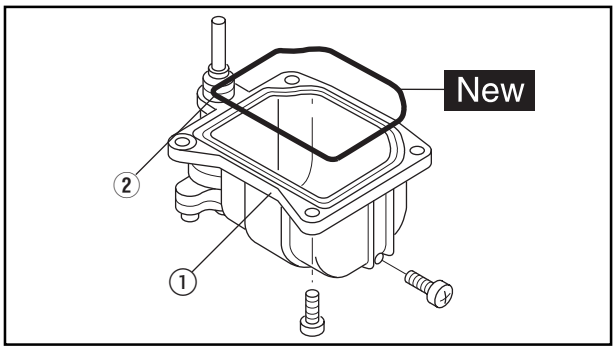
11. Check:
   • piston valve movement
   Insert the piston valve ① into the carburetor body and move it up and down.
   Tightness → Replace the throttle valve.
12. Check:
   • starter plunger
   • starter plunger spring
   Bends/cracks/damage → Replace.
13. Check:
   • hose joints
   Cracks/damage → Replace.
14. Check:
   • vacuum hoses
   • fuel hoses
   Cracks/damage/wear → Replace.
   Obstruction → Clean.
   Blow out the hoses with compressed air.

EAS00487
ASSEMBLING THE CARBURETOR

CAUTION:

- **Before assembling the carburetor, wash all of the parts in a petroleum-based solvent.**
- **Always use a new gasket.**





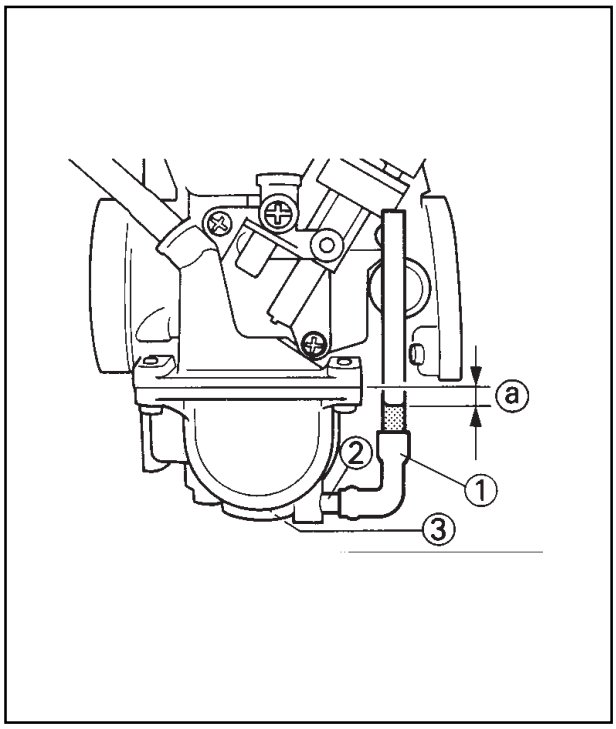
1. Install:
   - main jet holder
   - main jet
   - pilot jet
2. Install:
   - needle valve seat
3. Check:
   - float ①
   - needle valve
   - float axle ②

NOTE:

Install the float pin from the side opposite the arrow.

4. Install:
   - float chamber ①
   - gasket ② New
   - pilot screw
5. Install:
   - O-ring New
   - accelerator pump diaphragm
   - accelerator pump spring
   - accelerator pump cover
6. Install:
   - starter plunger kit
7. Install:
   - piston valve
   - jet needle holder
   - jet needle
8. Install:
   - throttle cable lever arm
9. Install:
   - vacuum chamber cover
10. Install:
    - Carburetor on engine

    Refer to “CARBURETOR REMOVAL AND DISASSEMBLY” section.



EAS00499
MEASURING AND ADJUSTING THE FUEL LEVEL

1. Measure:
   • fuel level ⓐ
   Out of specification → Adjust

Fuel level (below the float chamber mating surface)
5 ~ 6 mm

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Stand the scooter on a level surface.
b. Place the scooter on a suitable stand to ensure that the scooter is standing straight up.
c. Install the fuel level gauge ① onto the fuel drain pipe ②.

Fuel level gauge
90890-01312

d. Loosen the fuel drain screw ③.
e. Hold the fuel level gauge vertically next to the float chamber.
f. Measure the fuel level ⓐ.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

2. Adjust:
   • fuel level

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

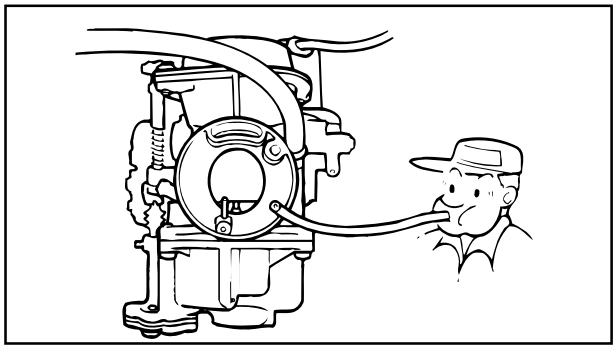
a. Remove the carburetor.
b. Check the needle valve seat and needle valve.
c. If either is worn, replace them as a set.
d. If both are fine, adjust the float level by slightly bending the float tang.
e. Install the carburetor.
f. Measure the fuel level again.
g. Repeat steps (a) to (f) until the fuel level is within specification.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

EAS00503
CHECKING THE AUTOCHOKE UNIT

NOTE:
When checking the autochoke unit, the ambient temperature must be lower than 45°C.

1. Remove:
   • carburetor
   Refer to "CARBURETOR REMOVAL" section.



2. Check:
   • autochoke unit

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Connect ø 3.3 mm hose to the starter air passage and blow into the hose.

NOTE:

When the starter plunger is open, air should come out of the other side of the starter air passage.

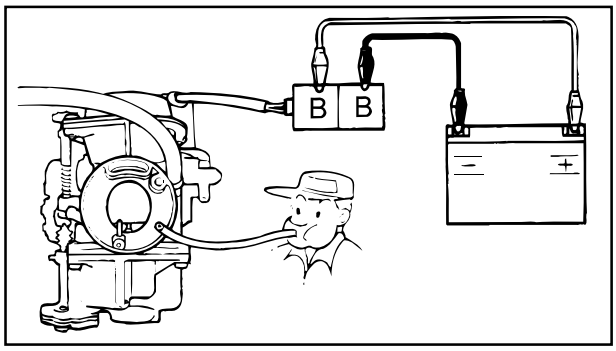
Starter plunger opens →Perform step.
Starter plunger closes →Replace the autochoke unit.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

3. Check:
   • autochoke unit

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Connect the autochoke unit leads to a 12.0V battery for five minutes.



Positive battery lead → black
Negative battery lead → black

b. Connect ø 3.3-mm hose to the starter air passage and blow into the hose.

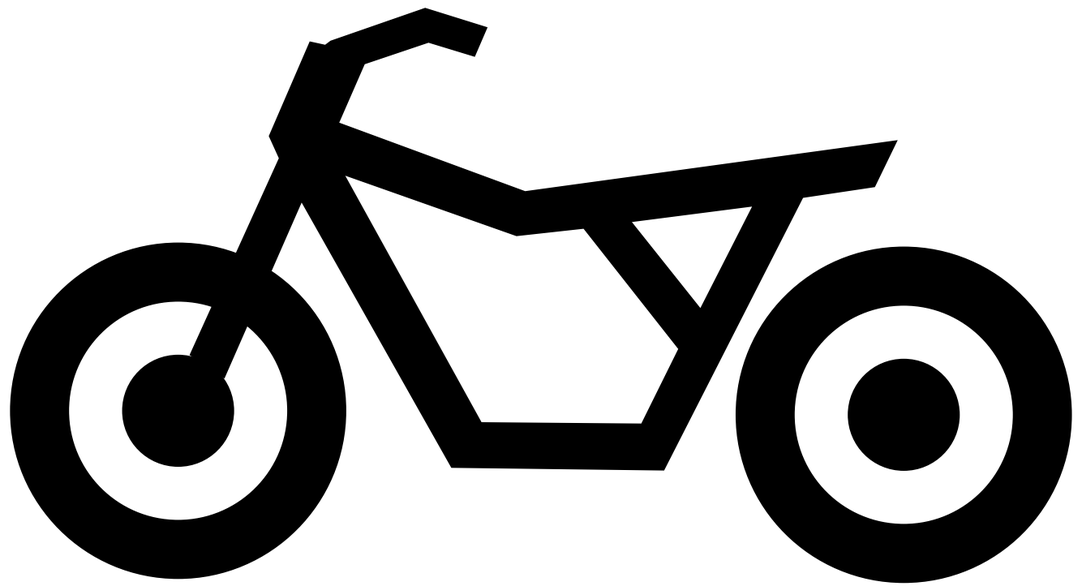
Starter plunger opens → Replace the autochoke unit.
Starter plunger closes → Autochoke unit is OK.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

EAS00505

CHECKING THE FUEL COCK

1. Check:
   • fuel cock
   Cracks/damage/wear → Replace.
2. Check:
   • fuel cock strainer
   (with compressed air)
   Dirt/obstruction → Clean.
   Damage → Replace.



CHAS 7

CHAPTER 7.
CHASSIS

FRONT WHEEL AND BRAKE DISC 7-1
REMOVING THE FRONT WHEEL 7-2
CHECKING THE FRONT WHEEL 7-3
CHECKING THE BRAKE DISC 7-4
CHECKING THE SPEEDOMETER GEAR UNIT 7-5
ASSEMBLING THE FRONT WHEEL 7-5
INSTALLING THE FRONT WHEEL 7-6
ADJUSTING THE FRONT WHEEL STATIC BALANCE 7-6

REAR WHEEL AND BRAKE 7-8
CHECKING THE REAR WHEEL 7-9
CHECKING THE REAR BRAKE 7-9
ASSEMBLING THE BRAKE SHOE PLATE 7-10
INSTALLING THE REAR WHEEL 7-10
ADJUSTING THE REAR WHEEL STATIC BALANCE 7-11

FRONT BRAKE 7-12
FRONT BRAKE PADS 7-12
REPLACING THE FRONT BRAKE PADS 7-13
FRONT BRAKE MASTER CYLINDER 7-15
MASTER CYLINDER 7-16
DISASSEMBLING THE FRONT BRAKE MASTER CYLINDER 7-17
CHECKING THE FRONT BRAKE MASTER CYLINDER 7-17
ASSEMBLING AND INSTALLING THE FRONT BRAKE MASTER CYLINDER - WARNING 7-18
DISASSEMBLING THE FRONT BRAKE CALIPER 7-19
CHECKING THE FRONT BRAKE CALIPER 7-20
ASSEMBLING AND INSTALLING THE FRONT BRAKE CALIPER 7-21

FRONT FORK 7-23
FRONT FORK DISASSEMBLY 7-24
REMOVING THE FRONT FORK LEGS 7-25
DISASSEMBLING THE FRONT FORK LEGS 7-25
CHECKING THE FRONT FORK LEGS 7-26
ASSEMBLING THE FRONT FORK LEGS 7-27
INSTALLING THE FRONT FORK LEGS 7-30

HANDLEBAR 7-31
CHECKING THE HANDLEBAR 7-32
INSTALLING THE HANDLEBAR 7-32

STEERING HEAD 7-34
REMOVING THE LOWER BRACKET 7-35
CHECKING THE STEERING HEAD 7-35
INSTALLING THE STEERING HEAD 7-36

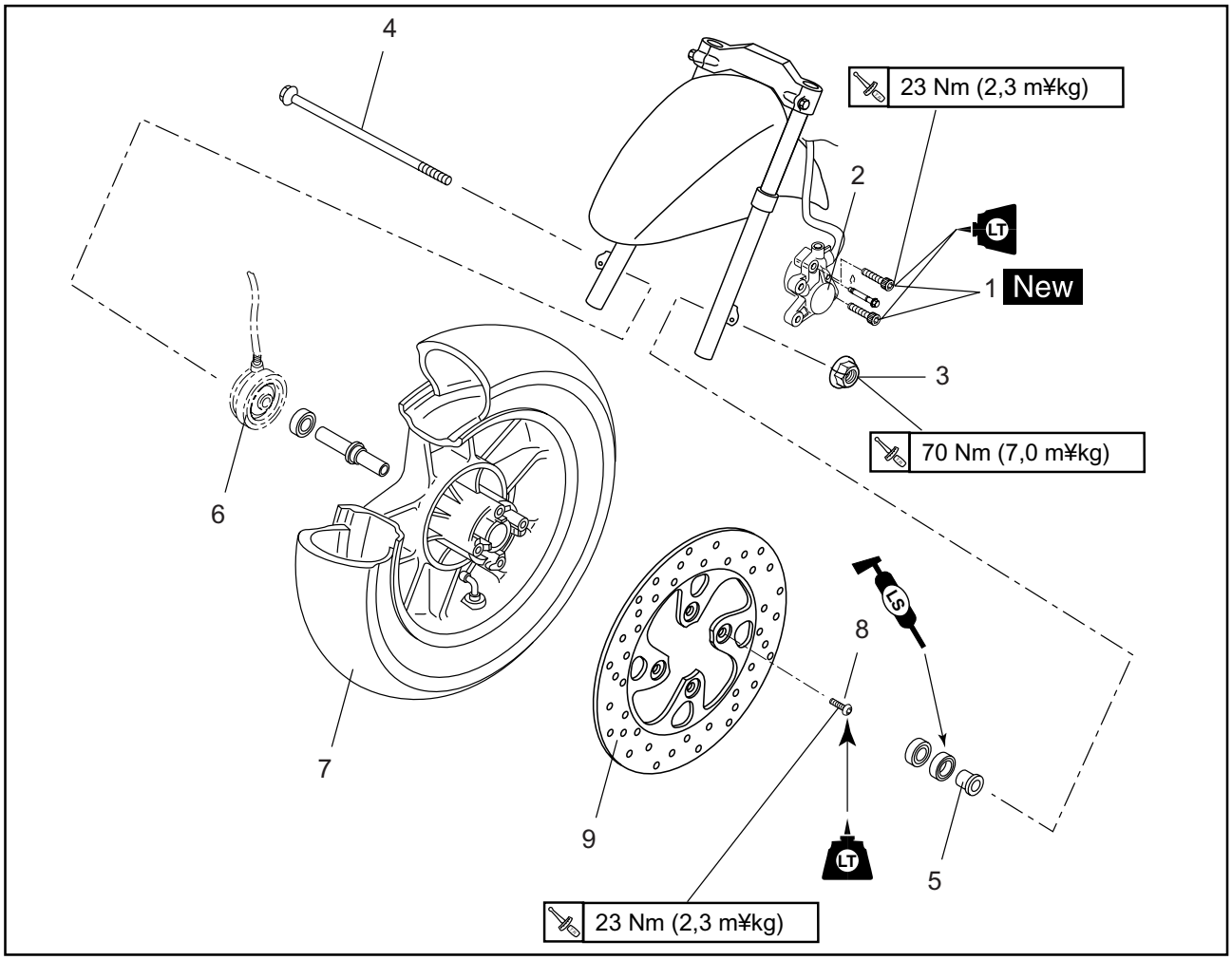
REAR SHOCK ABSORBER AND EXHAUST PIPE 7-37
CHECKING THE REAR SHOCK ABSORBER ASSEMBLY 7-38

EASM0040

CHASSIS

FRONT WHEEL AND BRAKE DISC

FRONT WHEEL AND BRAKE DISC



Order	Job/Part	Q'ty	Remarks
	Removing the front wheel and brake disc		Remove the parts in the order listed.
1	Front caliper mounting bolt	2	
2	Front caliper	1	
3	Front wheel axle nut	1	**NOTE:** Place the scooter on a suitable stand so that the front wheel is elevated.
4	Front wheel axle	1	
5	Front wheel collar	1	
6	Speedometer sensor	1	
7	Front wheel	1	
8	Front brake disc mounting screws	4	
9	Front brake disc	1	
			For installation, reverse the removal procedure.

EAS00520
REMOVING THE FRONT WHEEL

1. Stand the scooter on a level surface.

⚠ WARNING

Securely support the scooter so that there is no danger of it falling over.

NOTE:

Place the scooter on a suitable stand so that the front wheel is elevated.

2. Remove:
   - brake caliper

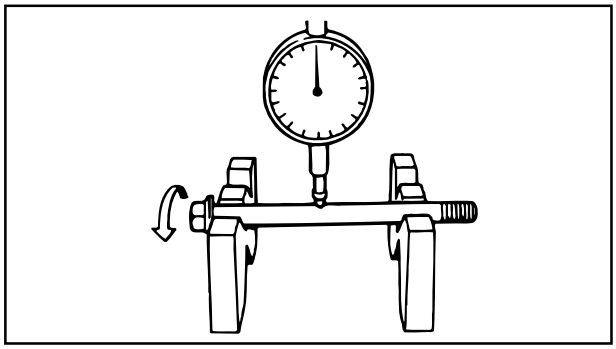
NOTE:

Do not squeeze the brake lever when removing the brake caliper.

3. Elevate:
   - front wheel

NOTE:

Place the scooter on a suitable stand so that the front wheel is elevated.



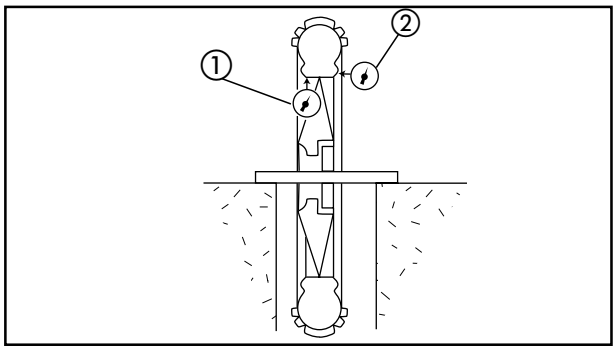
EAS00525
CHECKING THE FRONT WHEEL

1. Check:
   - wheel axle
     Roll the wheel axle on a flat surface.
     Bent → Replace.

⚠ WARNING

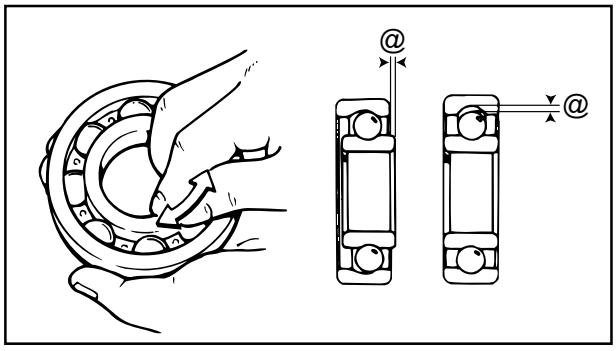
Do not attempt to straighten a bent wheel axle.

2. Check:
   - tyre
   - front wheel
     Damage/wear → Replace.
     Refer to "CHECKING THE TIRES" and "CHECKING THE WHEELS" in chapter 3.



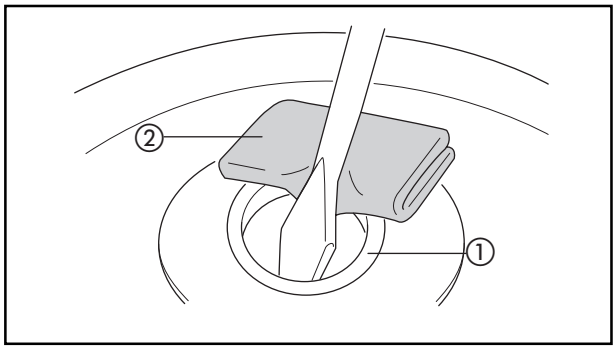
3. Measure:
   - radial wheel runout ①
   - lateral wheel runout ②
     Over the specified limits → Replace.

Radial wheel runout limit
1.0 mm
Lateral wheel runout limit
0.5 mm



4. Check:
   - wheel bearings
     Front wheel turns roughly or is loose → Replace the wheel bearings.
   - oil seals
     Damage/wear → Replace.
5. Replace:
   - wheel bearings New
   - oil seals New

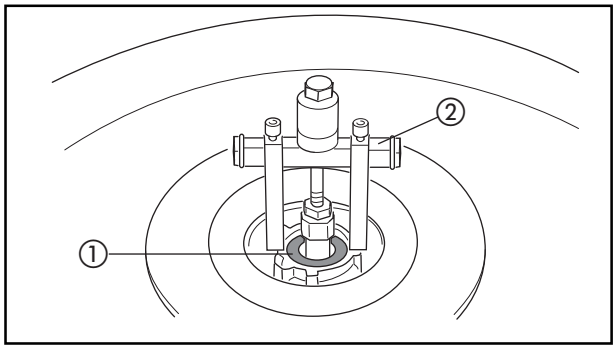
▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼



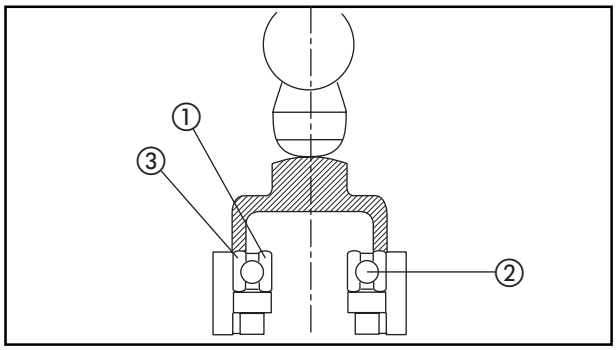
a. Clean the outside of the front wheel hub.
b. Remove the oil seals ① with a flat-head screwdriver.

NOTE:

To prevent damaging the wheel, place a rag ② between the screwdriver and the wheel surface.



c. Remove the wheel bearings ① with a general bearing puller ②.
d. Install the new wheel bearings and oil seals in the reverse order of disassembly.



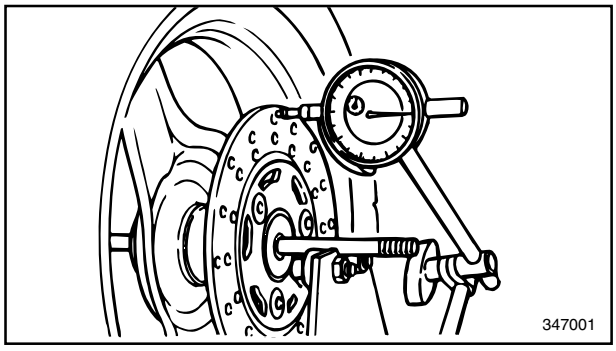
CAUTION:
Do not contact the wheel bearing inner race ① or balls ②. Contact should be made only with the outer race ③.

NOTE:
Use a socket that matches the diameter of the wheel bearing outer race and oil seal.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

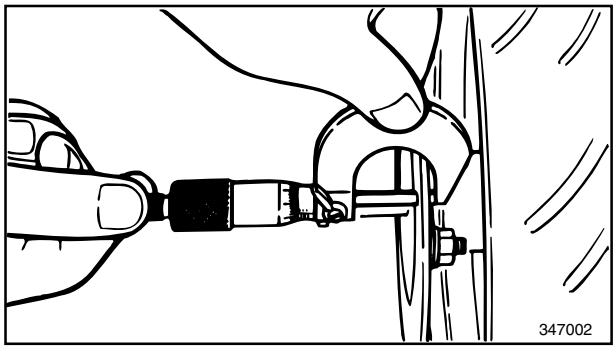
EAS00528
CHECKING THE BRAKE DISC
1. Check:
   • brake disc
   Damaged/galling → Replace.
2. Measure:
   • brake disc deflection
   Out of specification → Correct the brake disc deflection or replace the brake disc.

Brake disc deflection limit (maximum)
0.15 mm



▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Place the scooter on a suitable stand so that the front wheel is elevated.
b. Before measuring the front brake disc deflection, turn the handlebar to the left or right to ensure that the front wheel is stationary.
c. Remove the brake caliper.
d. Hold the dial gauge at a right angle against the brake disc surface.
e. Measure the deflection 2 ~ 3 mm below the edge of the brake disc.



▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

3. Measure:
   • brake disc thickness
   Measure the brake disc thickness at a few different locations.
   Out of specification → Replace.

Brake disc thickness limit (minimum)
4 mm

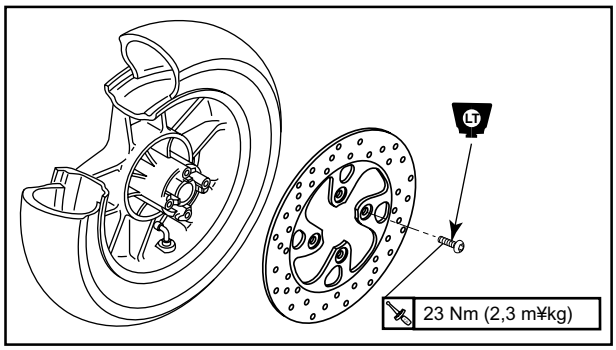
4. Adjust:
   • brake disc deflection

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Remove the brake disc.
b. Rotate the brake disc by one bolt hole.
c. Install the brake disc. **23 Nm (2.3m•kg)**

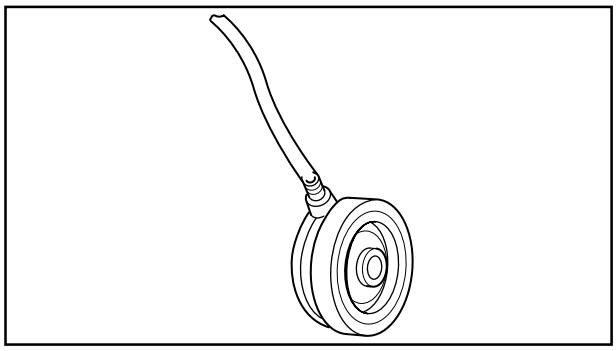
NOTE:

- Tighten the brake disc bolts in stages and in a crisscross pattern.
- Apply "Loctite" to the brake disc bolts.



d. Measure the brake disc deflection.
e. If out of specification, repeat the adjustment steps until the brake disc deflection is within specification.
f. If the brake disc deflection cannot be brought within specification, replace the brake disc.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲



EAS00535

CHECKING THE SPEEDOMETER GEAR UNIT

1. Check:
   • speedometer gear unit
   Bends/damage/wear → Replace.

EAS00539

ASSEMBLING THE FRONT WHEEL

1. Install:
   • wheel bearings
   • oil seals New

a. Install the new wheel bearings and oil seals in the reverse order of disassembly.

EAS00540
INSTALLING THE FRONT WHEEL

1. Lubricate:
   - wheel axle
   - wheel bearings
   - oil seal lips
   - speedometer gear unit
   - collar

	Recommended lubricant **Lithium soap base grease**

2. Install:
   - speedometer gear unit

NOTE:
Make sure that the speedometer gear unit and the wheel hub are installed with the projection meshed.

3. Install:
   - collar
   - front wheel
   - front wheel axle

⚠ WARNING
Be sure to assemble the front wheel as shown on page 7-1.

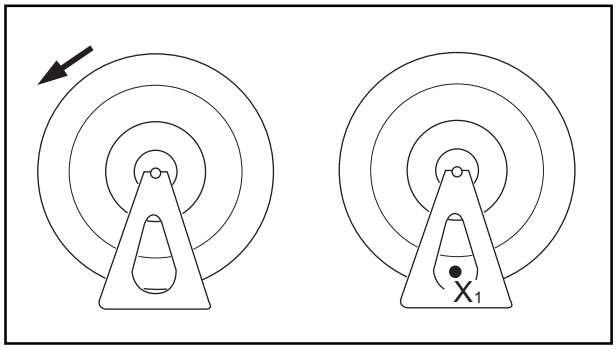
4. Tighten:
   - wheel axle nut **70 Nm (7.0m•kg)**

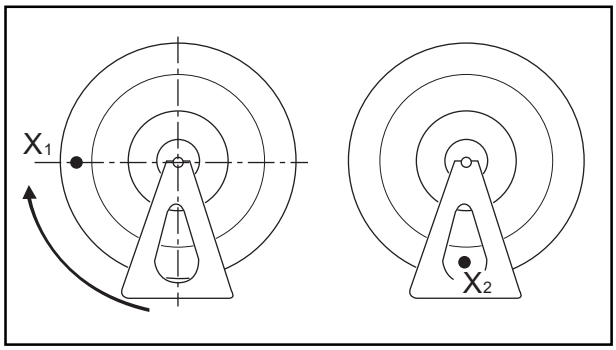
⚠ WARNING
Make sure the brake hose is routed properly.

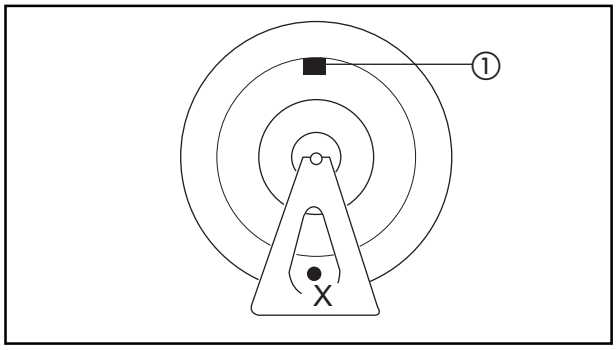
CAUTION:
Before tightening the wheel axle nut, push down hard on the handlebar several times and check if the front fork rebounds smoothly.

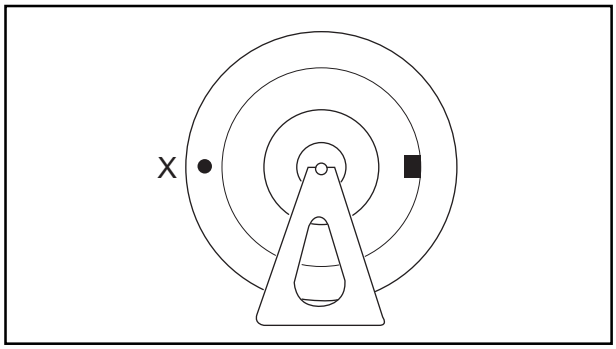
EAS00548
ADJUSTING THE FRONT WHEEL STATIC BALANCE

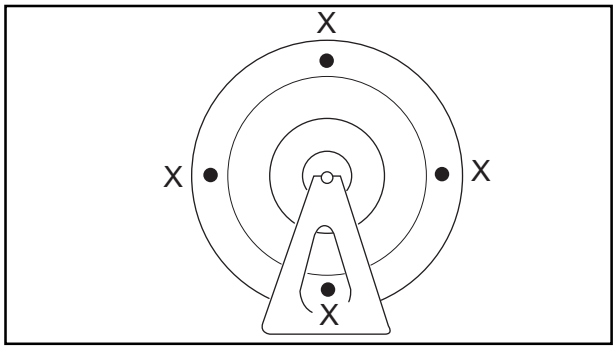
NOTE:
- After replacing the tyre, wheel or both, the front wheel static balance should be adjusted.
- Adjust the front wheel static balance with the brake disc installed.











1. Remove:
   • balancing weight(s)
2. Find:
   • front wheel's heavy spot

NOTE:
Place the front wheel on a suitable balancing stand.

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Spin the front wheel.
b. When the front wheel stops, put an "X1" mark at the bottom of the wheel.
c. Turn the front wheel 90° so that the "X1" mark is positioned as shown.
d. Release the front wheel.
e. When the wheel stops, put an "X2" mark at the bottom of the wheel.
f. Repeat steps (d) through (f) several times until all the marks come to rest at the same spot.
g. The spot where all the marks come to rest is the front wheel's heavy spot "X".

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

3. Adjust:
   • front wheel static balance

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Install a balancing weight ① onto the rim exactly opposite the heavy spot "X".

NOTE:
Start with the lightest weight.

b. Turn the front wheel 90° so that the heavy spot is positioned as shown.
c. If the heavy spot does not stay in that position, install a heavier weight.
d. Repeat steps (b) and (c) until the front wheel is balanced.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

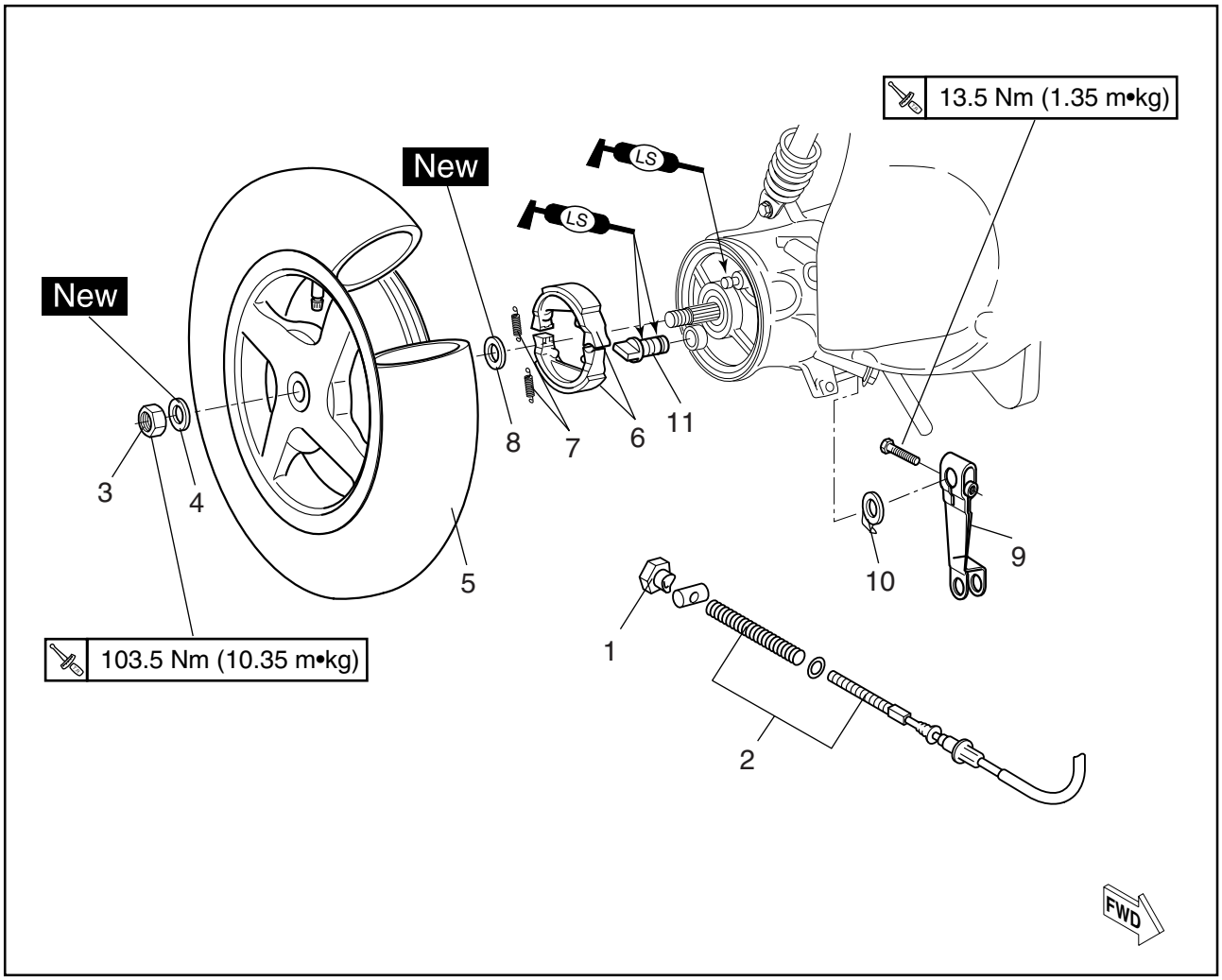
4. Check:
   • front wheel static balance

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

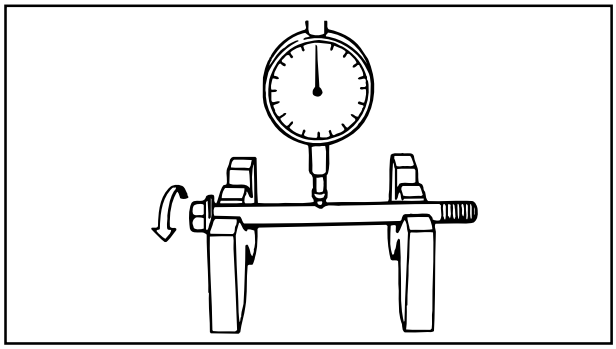
a. Turn the front wheel and make sure it stays at each position shown.
b. If the front wheel does not remain stationary at all of the positions, rebalance it.

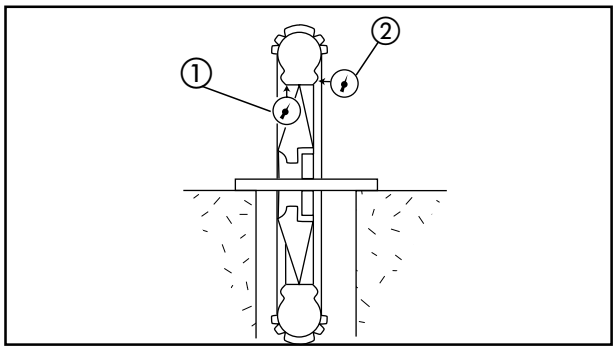
▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

EASM0041
REAR WHEEL AND BRAKE



Order	Job/Part	Q'ty	Remarks
	Removing the rear wheel and brake		Remove the parts in the order listed.
	Exhaust pipe (cylinder)	1	
	Exhaust pipe (bracket holder)	1	
1	Rear brake adjuster	1	
2	Rear brake cable/spring	1/1	
3	Rear wheel axle nut	1	**NOTE:** Place the scooter on a suitable stand so that the rear wheel is elevated.
4	Plate washer	1	
5	Rear wheel	1	
6	Brake shoes lining	2	
7	Tension spring	2	
8	Plate washer	1	
9	Brake cam lever	1	
10	Indicator plate	1	
11	Brake cam	1	For installation, reverse the removal procedure.





EAS00565
CHECKING THE REAR WHEEL

1. Check:
   - wheel axle
   - rear wheel
   - wheel bearings
   - oil seals

   Refer to "FRONT WHEEL AND BRAKE DISC" section.
2. Check:
   - tyre
   - rear wheel

   Damage/wear → Replace.
   Refer to "CHECKING THE TYRES" and "CHECKING THE WHEELS" in chapter 3.
3. Measure:
   - radial wheel runout ①
   - lateral wheel runout ②

   Refer to "FRONT WHEEL AND BRAKE DISC" section.

Radial wheel runout limit
1.0 mm
Lateral wheel runout limit
0.5 mm

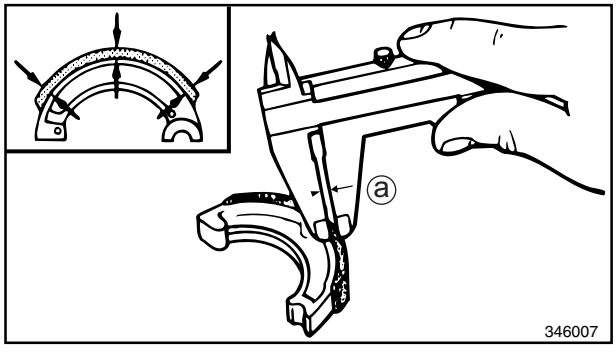
EAS00569
CHECKING THE REAR BRAKE

The following procedure applies to all of the brake shoes.

1. Check:
   - brake shoe lining

   Glazed areas → Repair.
   Sand the glazed areas with course sandpaper.

NOTE:
After sanding the glazed areas, clean the brake shoe with a cloth.

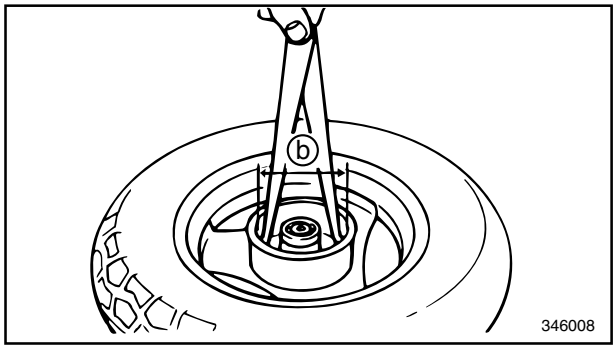


2. Measure:
   - brake shoe lining thickness ⓐ

   Out of specification → Replace.

Brake shoe lining thickness limit (minimum)
2 mm

⚠ WARNING
Do not allow oil or grease to contact the brake shoes.

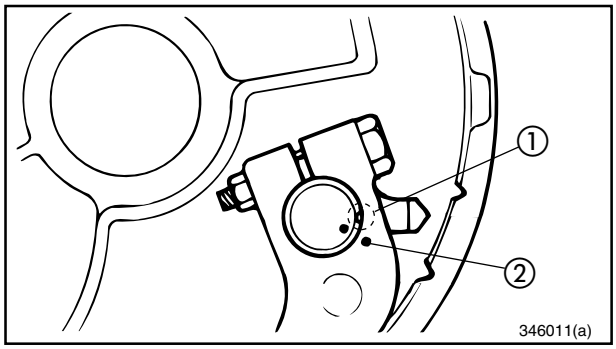


NOTE:
Replace the brake shoes as a set, if either is worn to the wear limit.

3. Measure:
   • brake drum inside diameter ⓑ
   Out of specification → Replace the wheel.

Brake drum inside diameter limit (maximum)
130.5 mm

4. Check:
   • brake drum inner surface
   Oil deposits → Clean.
   Remove the oil with a rag soaked in lacquer thinner or solvent.
   Scratches → Repair.
   Lightly and evenly polish the scratches with an emery cloth.
5. Check:
   • brake camshaft
   Damage/wear → Replace.



EAS00570
ASSEMBLING THE BRAKE SHOE PLATE

1. Install:
   • brake camshaft ①
   • spring
   • brake shoe wear indicator ②

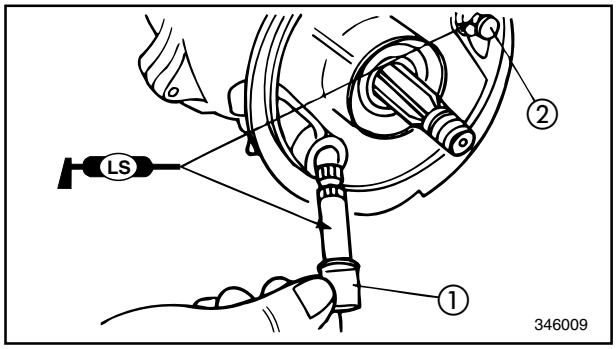
▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

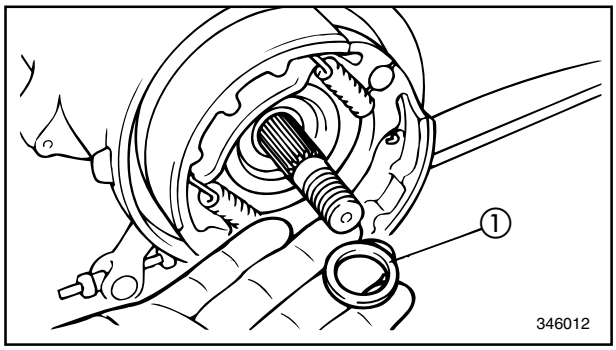
a. Install the brake camshaft so its punch mark is positioned as shown.
b. Align the projection on the brake shoe wear indicator with the notch in the brake shoe camshaft.
c. Check that the brake shoes are properly positioned.

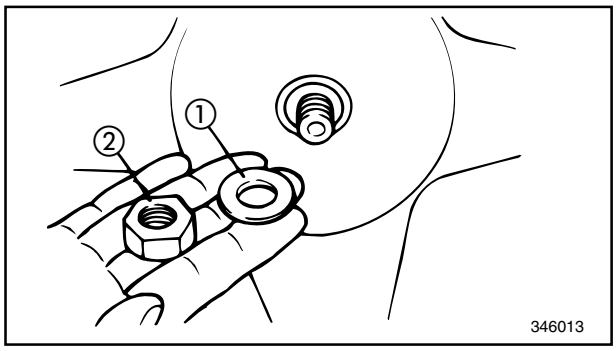
▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

EAS00573
INSTALLING THE REAR WHEEL

1. Install:
   • brake camshaft
   • brake shoe wear indicator
   • brake camshaft lever







NOTE:
- Align the punch mark in the brake camshaft with the mark on the brake camshaft lever.
- Lubricate the brake camshaft ① and pin ② with lithium soap base grease.

⚠ WARNING

After installing the rear brake camshaft, remove any excess grease.

2. Install:
   - brake shoes
   - spring plain washer ①

NOTE:

Do not to damage the springs during installation.

3. Lubricate:
   - wheel axle
   - plain washer ①

Recommended lubricant
Lithium soap base grease

4. Tighten:
   - plain washer ①
   - wheel axle nut ② **103.5 Nm (10.35m•kg)**
5. Adjust:
   - brake lever free play
     Refer to "ADJUSTING THE REAR BRAKE" section in chapter 3.

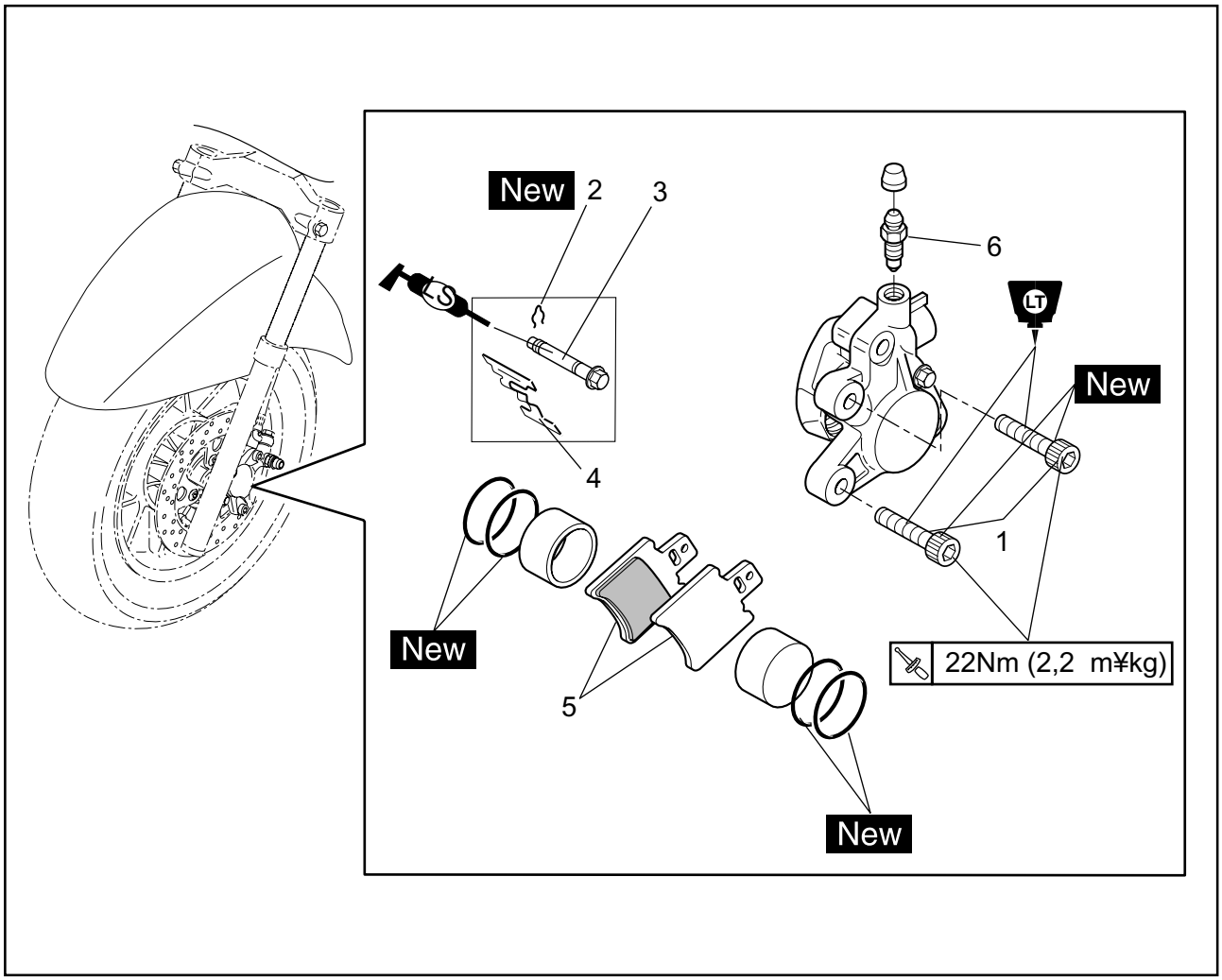
EAS00575

ADJUSTING THE REAR WHEEL STATIC BALANCE

NOTE:
- After replacing the tire, wheel or both, the rear wheel static balance should be adjusted.
- Adjust the rear wheel static balance with the brake disc and rear wheel drive hub installed.

1. Adjust:
   - rear wheel static balance
     Refer to "FRONT WHEEL AND BRAKE DISC" section.

EASM0042
FRONT BRAKE
FRONT BRAKE PADS



Order	Job/Part	Q'ty	Remarks
	Removing the front brake pads Front caliper		Remove the parts in the order listed. Refer to "REMOVING THE FRONT WHEEL" section.
1	Caliper fixing bolt	2	
2	Retaining clip	1	
3	Retaining pin	1	
4	Pad spring	1	
5	Brake pads	2	
6	Bleed screw	1	
			For installation, reverse the removal procedure.

EAS00579

CAUTION:

Disc brake components rarely require disassembly.
Therefore, always follow these preventive measures:

- **Never disassemble brake components unless absolutely necessary.**
- **If any connection on the hydraulic brake system is disconnected, the entire brake system must be disassembled, drained, cleaned, properly filled, and bled after reassembly.**
- **Never use solvents on internal brake components.**
- **Use only clean or new brake fluid for cleaning brake components.**
- **Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.**
- **Avoid brake fluid coming into contact with the eyes as it can cause serious injury.**

FIRST AID FOR BRAKE FLUID ENTERING THE EYES:

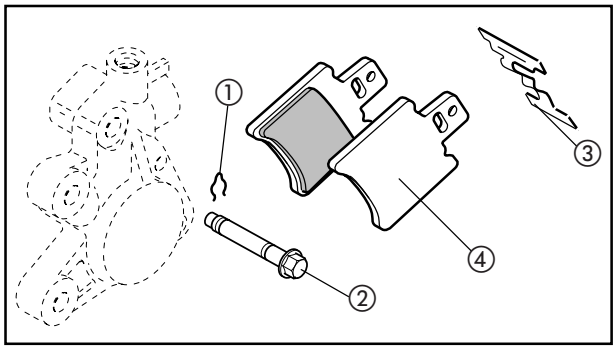
- **Flush with water for 15 minutes and get immediate medical attention.**

EAS00581

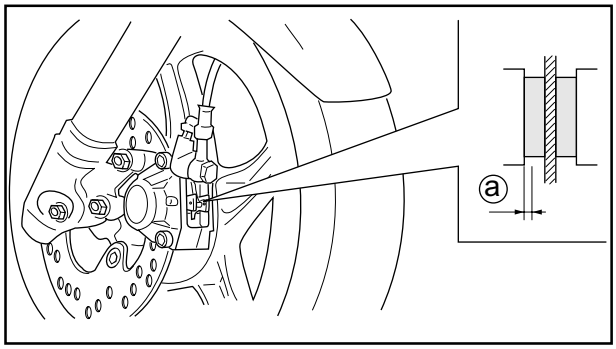
REPLACING THE FRONT BRAKE PADS

NOTE:

When replacing the brake pads, it is not necessary to disconnect the brake hose or disassemble the brake caliper.



1. Remove:
   - caliper fixing bolts
2. Remove:
   - brake caliper
3. Remove:
   - retaining clip ①
   - retaining pin ②
   - brake pad spring ③
   - brake pads ④

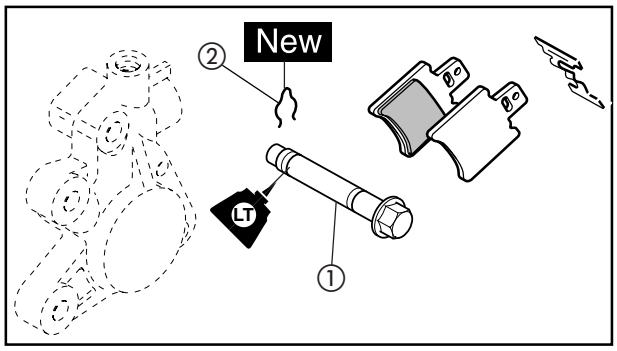


4. Measure:
   • brake pad wear limit ⓐ
   Out of specification → Replace the brake pads as a set.

Brake pad wear limit
0.8 mm

5. Install:
   • brake pad spring
   • brake pads

NOTE:
- Always install new brake pads and a new brake pad spring as a set.
- Make sure the brake pad spring is installed correctly.



6. Push the caliper piston into the brake caliper by finger.

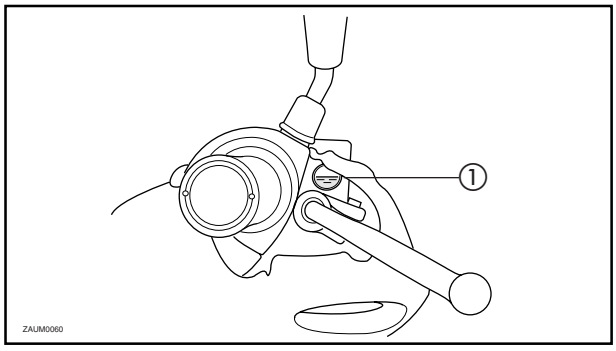
CAUTION:
When pushing the caliper piston into the brake caliper, brake fluid level in the reservoir tank is increasing higher.

7. Install:
   • retaining pin ①
   • retaining clip ② New

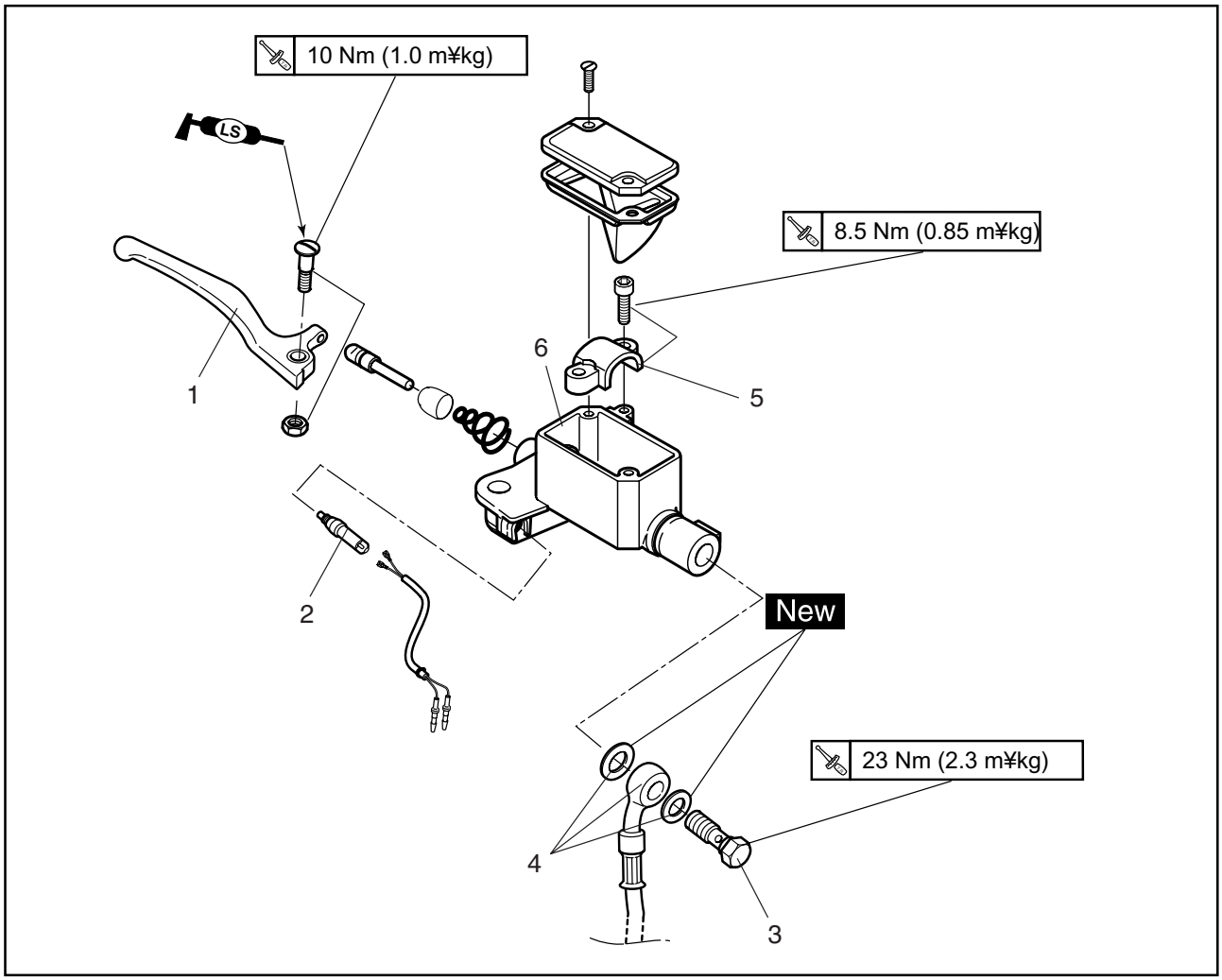
CAUTION:
Do not allow grease to contact the brake pads.

8. Install:
   • brake caliper
   • brake caliper fixing bolt **23 Nm (2.3m•kg)**

9. Check:
   • brake fluid level
   Below the minimum level mark ① → Add the recommended brake fluid to the proper level.
   Refer to "CHECKING THE BRAKE FLUID LEVEL" section in chapter 3.
10. Check:
   • brake lever operation
   Soft or spongy feeling → Bleed the brake system.
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" section in chapter 3.

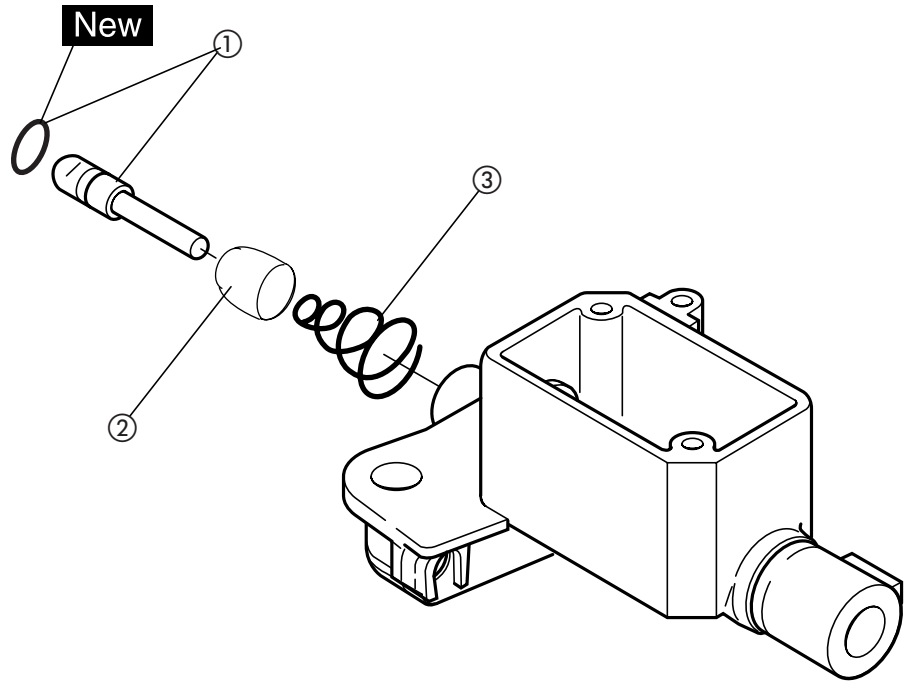


EASM0043
FRONT BRAKE MASTER CYLINDER

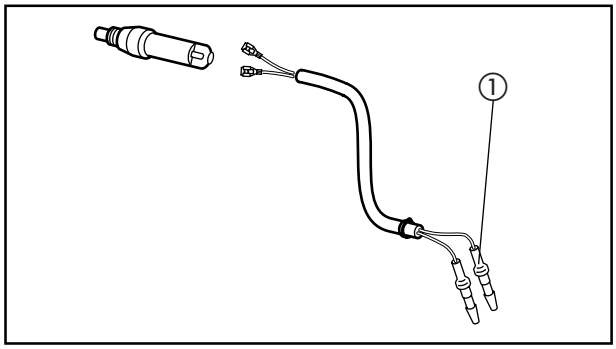


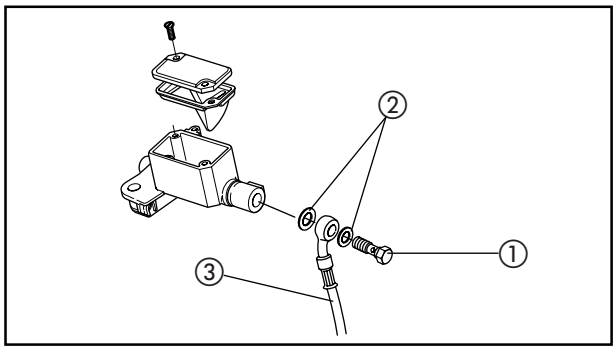
Order	Job/Part	Q'ty	Remarks
	Removing the front brake master cylinder		Remove the parts in the order listed.
	Drain brake fluid		Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" section in chapter 3.
	Handlebar covers		Refer to "HANDLEBAR COVERS" section in chapter 3.
1	Front brake lever	1	
2	Front brake switch	1	
3	Hose union bolt	1	
4	Plain washer/hose	2/1	
5	Master cylinder bracket	1	
6	Master cylinder	1	
			For installation, reverse the removal procedure.

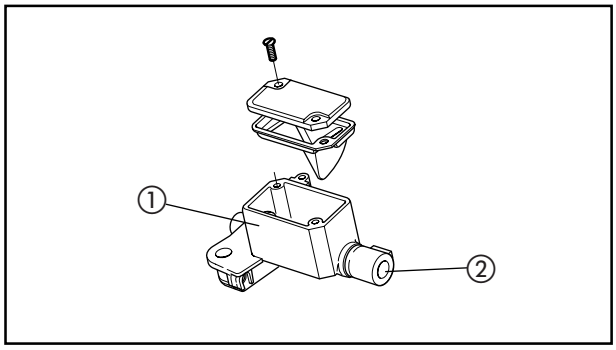
EASM0044
MASTER CYLINDER

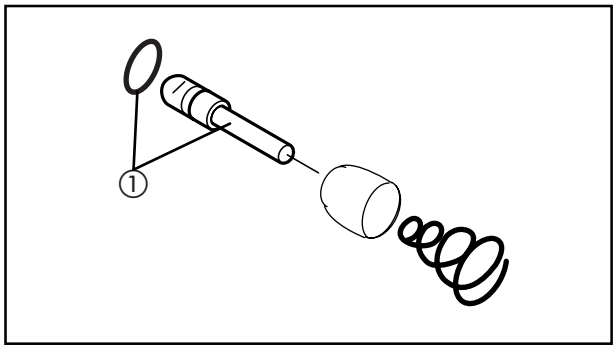


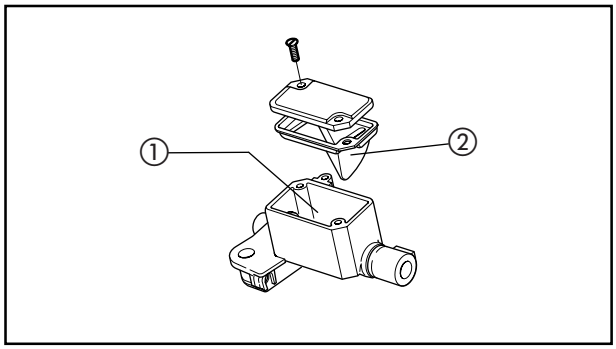
Order	Job/Part	Q'ty	Remarks
	Disassembling the master cylinder Master cylinder		Disassemble the parts in the order listed. Refer to "FRONT BRAKE MASTER CYLINDER" section.
①	Master cylinder kit	1	
②	Master cylinder spring seat	1	
③	Spring	1	
			For assembly, reverse the removal procedure.











EAS00588
DISASSEMBLING THE FRONT BRAKE MASTER CYLINDER

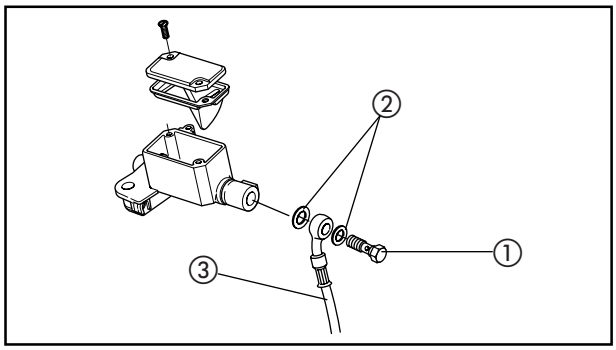
NOTE:
Before disassembling the front brake master cylinder, drain the brake fluid from the entire brake system.

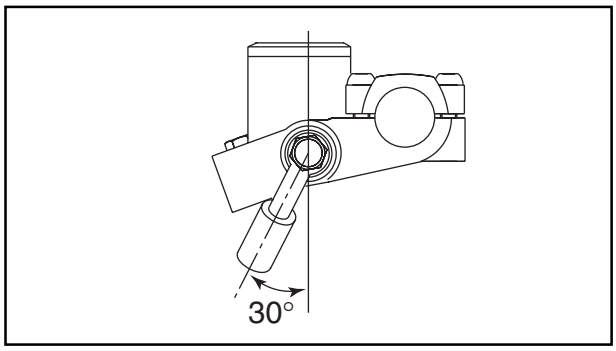
1. Disconnect:
   - brake switch coupler ①
     (from the brake switch)
2. Remove:
   - union bolt ①
   - copper washers ②
   - brake hoses ③

NOTE:
To collect any remaining brake fluid, place a container under the master cylinder and the end of the brake hose.

EAS00590
CHECKING THE FRONT BRAKE MASTER CYLINDER

1. Check:
   - brake master cylinder ①
     Damage/scratches/wear → Replace.
   - brake fluid delivery passages ②
     (brake master cylinder body)
     Obstruction → Blow out with compressed air.
2. Check:
   - brake master cylinder kit ①
     Damage/scratches/wear → Replace.
3. Check:
   - brake master cylinder reservoir ①
     Cracks/damage → Replace.
   - brake master cylinder reservoir diaphragm ②
     Damage/wear → Replace.
4. Check:
   - brake hoses
     Cracks/damage/wear → Replace.





EAS00596

ASSEMBLING AND INSTALLING THE FRONT BRAKE MASTER CYLINDER

WARNING

Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.

⚠ WARNING

Never use solvents on internal brake components.

Recommended brake fluid
DOT#3 or DOT#4

1. Install:
   - copper washers New ②
   - brake hose ③
   - union bolt ① **26 Nm (2.6m•kg)**

⚠ WARNING

Proper brake hose routing is essential to insure safe scooter operation. Refer to "CABLE ROUTING".

NOTE:

- While holding the brake hose, tighten the union bolt as shown.
- Turn the handlebar to the left and to the right to make sure the brake hose does not touch other parts (e.g., wire harness, cables, leads). Correct if necessary.

3. Fill:
   - brake master cylinder reservoir
     (with the specified amount of the recommended brake fluid)

Recommended brake fluid
DOT#3 or DOT#4

⚠ WARNING

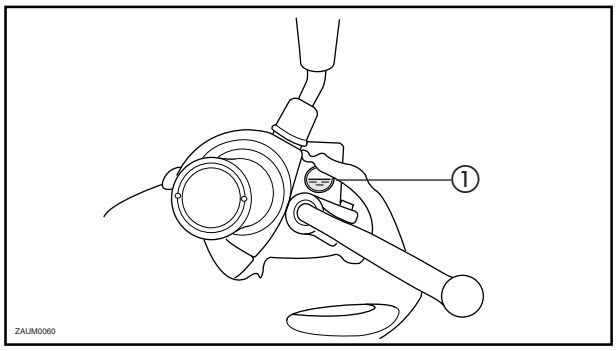
- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**

- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake master cylinder reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

CAUTION:

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

4. Bleed:
   - brake system
     Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.
5. Check:
   - brake fluid level
     Below the minimum level mark ① → Add the recommended brake fluid to the proper level.
     Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.
6. Check:
   - brake lever operation
     Soft or spongy feeling → Bleed the brake system.
     Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.



EAS00618
DISASSEMBLING THE FRONT BRAKE CALIPER

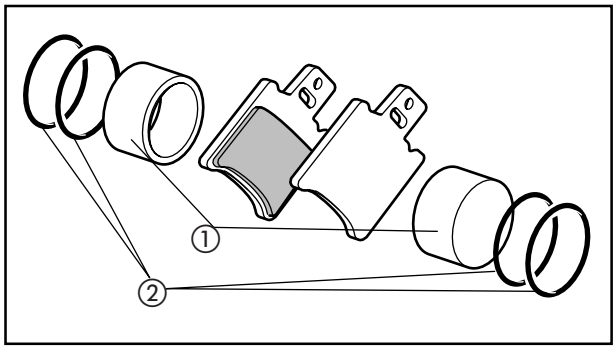
NOTE:

Before disassembling the brake caliper, drain the brake fluid from the entire brake system.

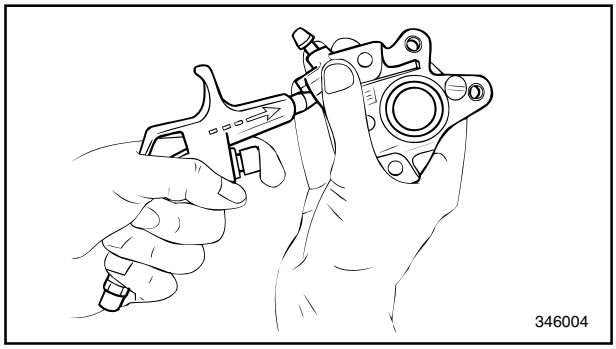
1. Remove:
   - union bolt
   - copper washers
   - brake hose

NOTE:

Put the end of the brake hose into a container and pump out the brake fluid carefully.



2. Remove:
   - brake caliper piston ①
   - brake caliper piston seals ②



▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Blow compressed air into the brake hose joint opening to force out the piston from the brake caliper.

⚠ WARNING

- **Cover the brake caliper piston with a rag. Be careful not to get injured when the piston is expelled from the brake caliper.**
- **Never try to pry out the brake caliper piston.**

b. Remove the brake caliper piston seals.

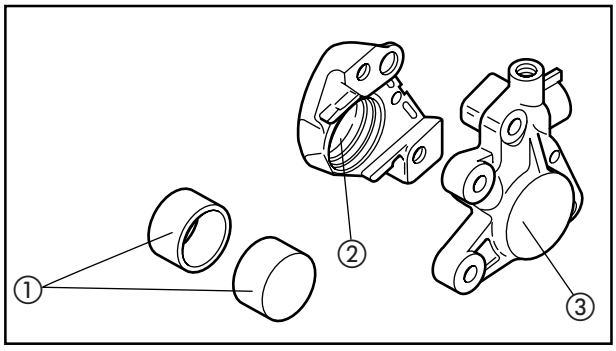
▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

EAS00631

CHECKING THE FRONT BRAKE CALIPER

Recommended brake component replacement schedule

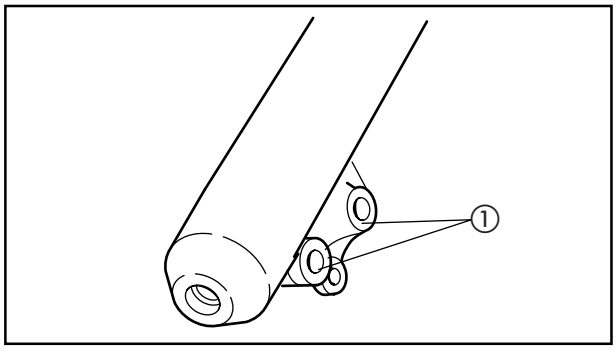
Brake pads	**If necessary**
Piston seals	**Every two years**
Brake hoses	**Every two years**
Brake fluid	**Every two years and whenever the brake is disassembled**



1. Check:
   - brake caliper pistons ①
     Rust/scratches/wear → Replace the brake caliper.
   - brake caliper cylinders ②
     Scratches/wear → Replace the brake caliper.
   - brake caliper body ③
     Cracks/damage → Replace the brake caliper.
   - brake fluid delivery passages (brake caliper body)
     Obstruction → Blow out with compressed air.

⚠ WARNING

Whenever a brake caliper is disassembled, replace the piston seals.



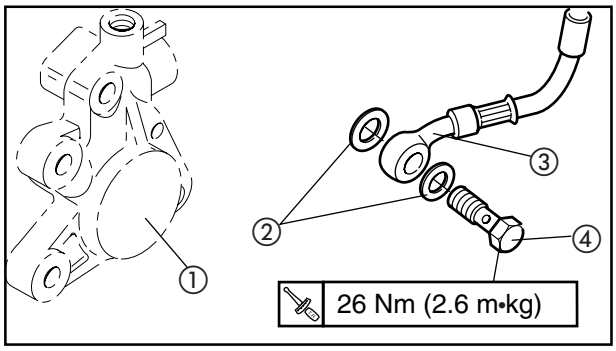
2. Check:
   - brake caliper bracket ①
     Cracks/damage → Replace.

EAS00635
ASSEMBLING AND INSTALLING THE FRONT BRAKE CALIPER

⚠ WARNING

- **Before installation, all internal brake components should be cleaned and lubricated with clean or new brake fluid.**
- **Never use solvents on internal brake components as they will cause the piston seals to swell and distort.**
- **Whenever a brake caliper is disassembled, replace the brake caliper piston seals.**

Recommended brake fluid
DOT#3 or DOT#4



1. Install:
   - brake caliper ① (temporarily)
   - copper washers New ②
   - brake hose ③
   - union bolt ④ **26 Nm (2.6m•kg)**

⚠ WARNING

Proper brake hose routing is essential to insure safe scooter operation. Refer to "CABLE ROUTING".

CAUTION:

When installing the brake hose onto the brake caliper ①, make sure the brake pipe touches the projection on the brake caliper.

2. Remove:
   - brake caliper
3. Install:
   - brake pads
   - brake pad springs
   - brake caliper retaining bolt
   - brake caliper **22 Nm (2.2m•kg)**
   - brake hose holder

   Refer to "REPLACING THE FRONT BRAKE PADS" section.

4. Fill:
   • brake master cylinder reservoir
   (with the specified amount of the recommended brake fluid)

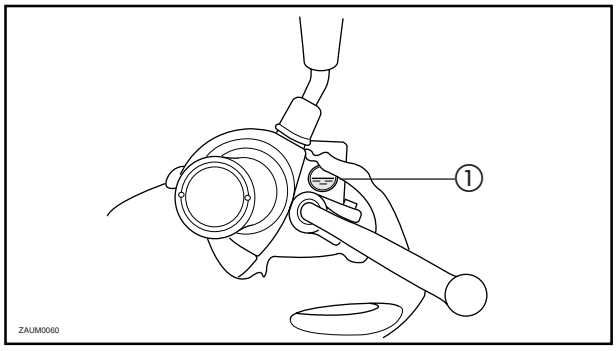
Recommended brake fluid
DOT#3 or DOT#4

⚠ WARNING

- **Use only the designated brake fluid. Other brake fluids may cause the rubber seals to deteriorate, causing leakage and poor brake performance.**
- **Refill with the same type of brake fluid that is already in the system. Mixing brake fluids may result in a harmful chemical reaction, leading to poor brake performance.**
- **When refilling, be careful that water does not enter the brake master cylinder reservoir. Water will significantly lower the boiling point of the brake fluid and could cause vapor lock.**

CAUTION:

Brake fluid may damage painted surfaces and plastic parts. Therefore, always clean up any spilt brake fluid immediately.

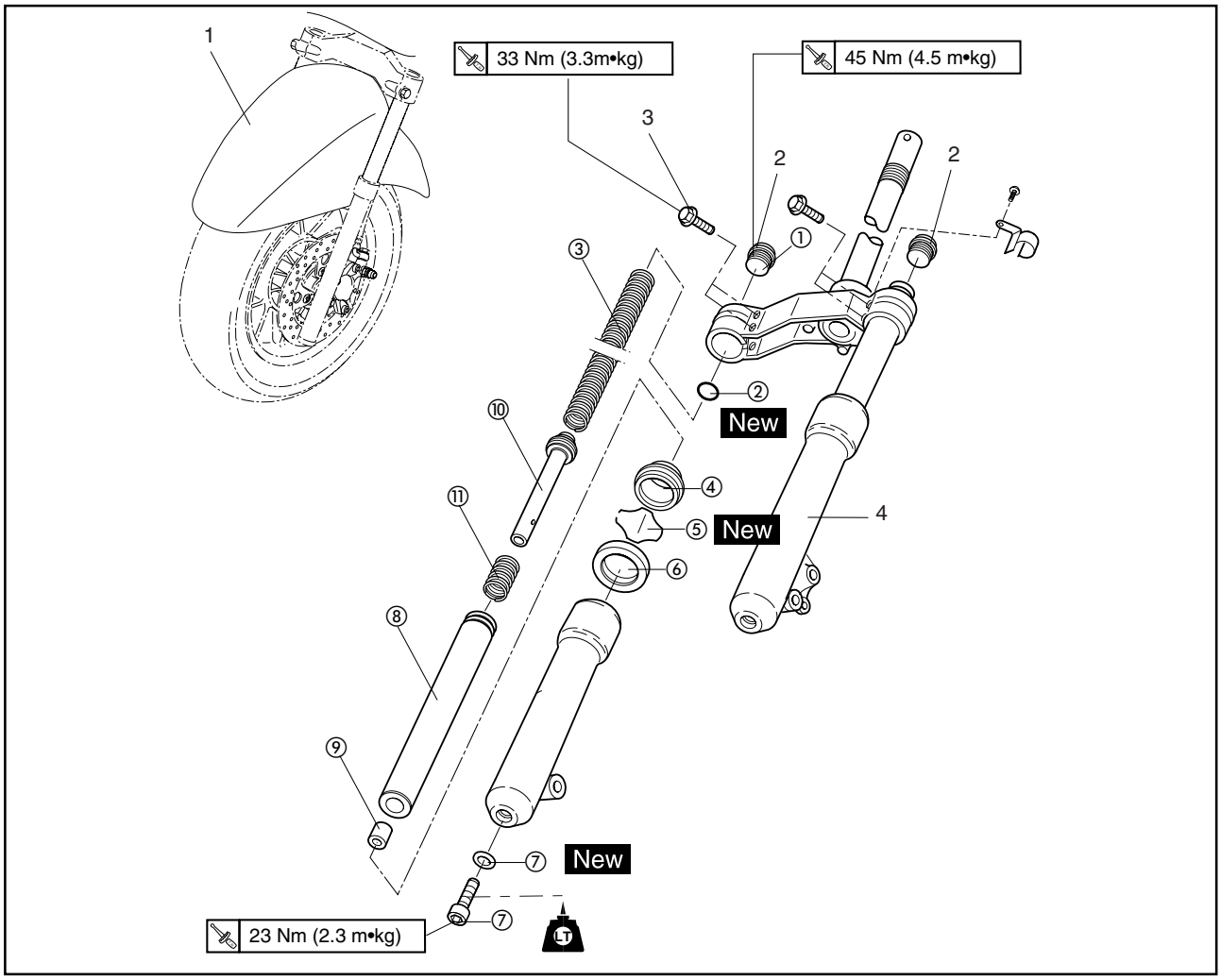


5. Bleed:
   • brake system
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.
6. Check:
   • brake fluid level
   Below the minimum level mark ① → Add the recommended brake fluid to the proper level.
   Refer to "CHECKING THE BRAKE FLUID LEVEL" in chapter 3.
7. Check:
   • brake lever operation
   Soft or spongy feeling → Bleed the brake system.
   Refer to "BLEEDING THE HYDRAULIC BRAKE SYSTEM" in chapter 3.

EASM0045

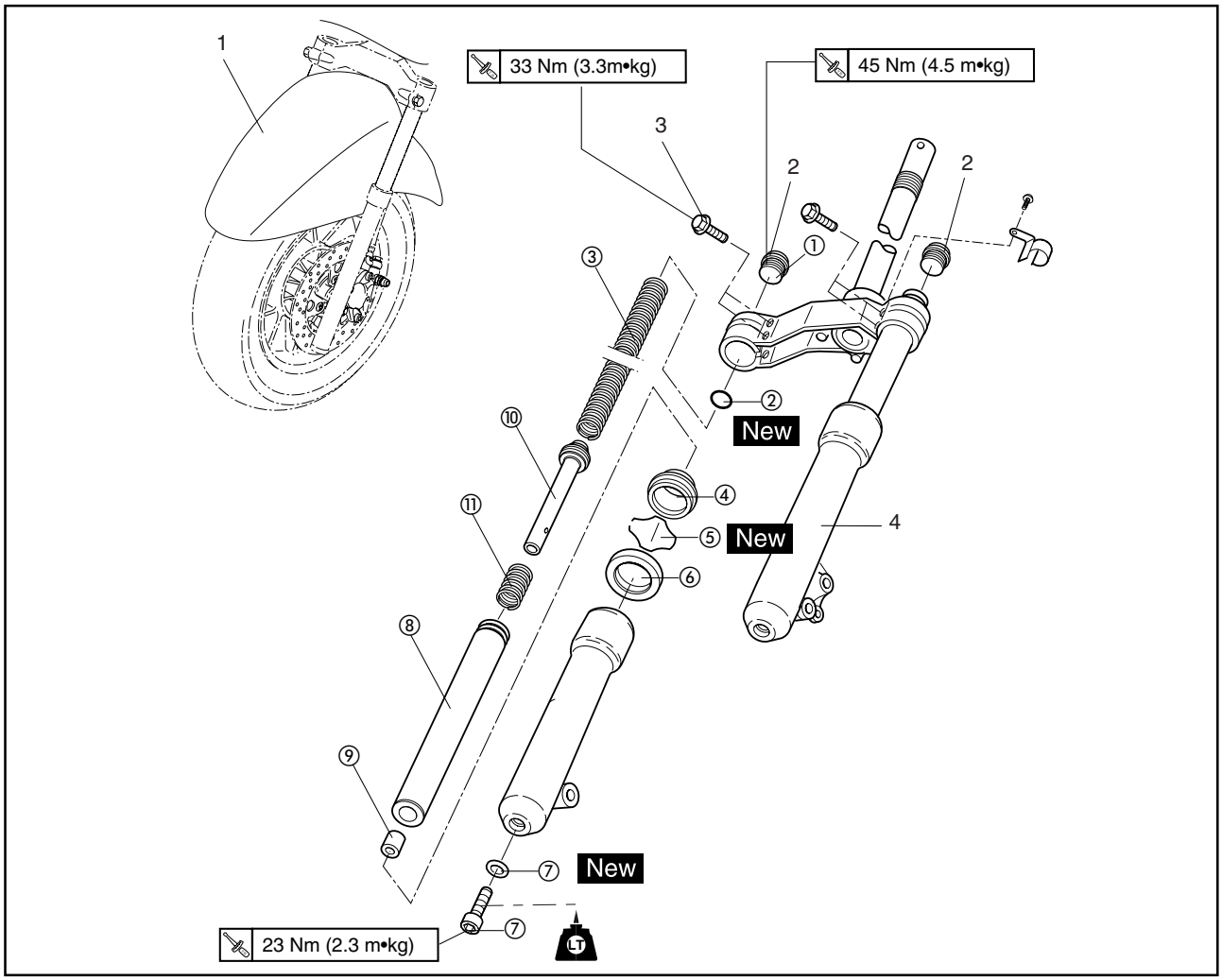
FRONT FORK

FRONT FORK

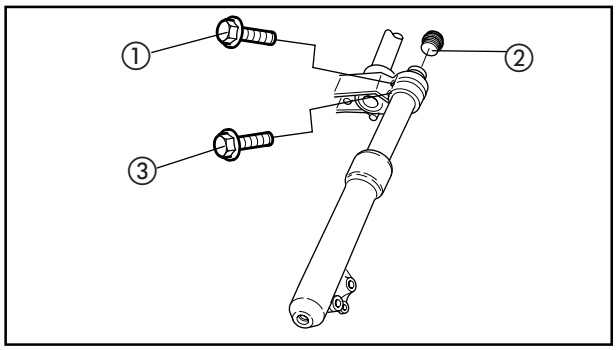


Order	Job/Part	Q'ty	Remarks
	Removing the front fork		Remove the parts in the order listed.
	Front wheel		Refer to "FRONT WHEEL AND BRAKE" section.
1	Front mudguard	1	**NOTE:** Disconnect the speedometer sensor coupler to remove the front mudguard.
2	Cap bolt/O-ring	1/1	
3	Bolt (under bracket upper and lower)	2	
4	Front fork leg (right and left)	2	
			For installation, reverse the removal procedure.

EASM0046
FRONT FORK DISASSEMBLY



Order	Job/Part	Q'ty	Remarks
	Disassembling the front fork		Disassemble the parts in the order listed.
①	Cap bolt	1	
②	O-ring	1	
③	Fork spring	1	
④	Dust seal	1	
⑤	Retaining clip	1	
⑥	Oil seal	1	
⑦	Bolt (damper rod)/Gasket	1/1	
⑧	Inner tube	1	
⑨	Oil lock piece	1	
⑩	Damper rod	1	
⑪	Rebound spring	1	
			For assembly, reverse the disassembly procedure.



EAS00649
REMOVING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

1. Stand the scooter on a level surface.

⚠ WARNING

Securely support the scooter so that there is no danger of it falling over.

NOTE:

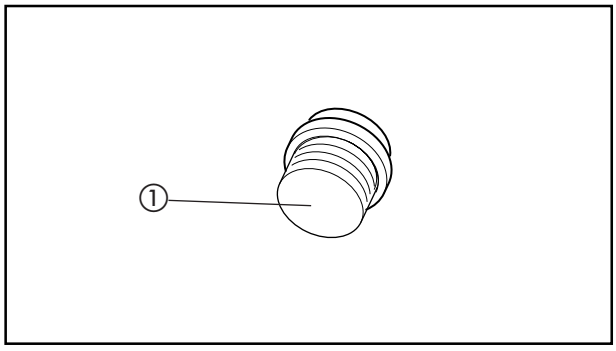
Place the scooter on a suitable stand so that the front wheel is elevated.

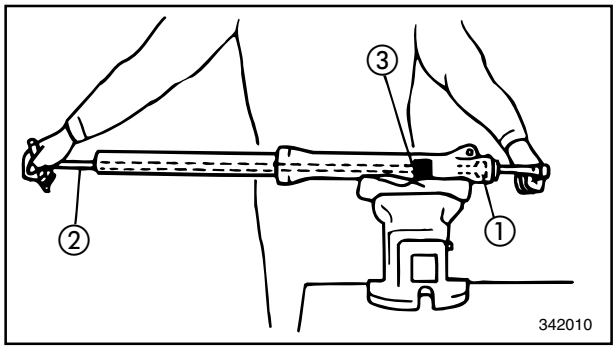
2. Remove the front wheel
   Refer to "REMOVING THE FRONT WHEEL" section.
3. Loosen:
   - upper bracket pinch bolt ①
   - cap bolt ②
   - lower bracket pinch bolt ③

⚠ WARNING

Before loosening the upper and lower bracket pinch bolts, support the front fork leg.

4. Remove:
   - front fork leg





EAS00653
DISASSEMBLING THE FRONT FORK LEGS

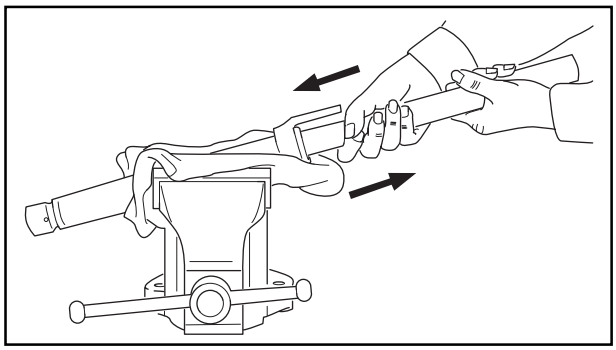
The following procedure applies to both of the front fork legs.

1. Remove:
   - cap bolt ①
     (from the damper adjusting rod)
2. Remove:
   - O-ring
3. Drain:
   - fork oil
4. Remove:
   - damper rod assembly bolt ①
   - damper rod assembly ②

NOTE:

While holding the damper rod with the damper rod holder ③, loosen the damper rod assembly bolt.

Damper rod holder ③
90890-01294
T-handle ②
90890-01326



5. Remove:
   • inner tube

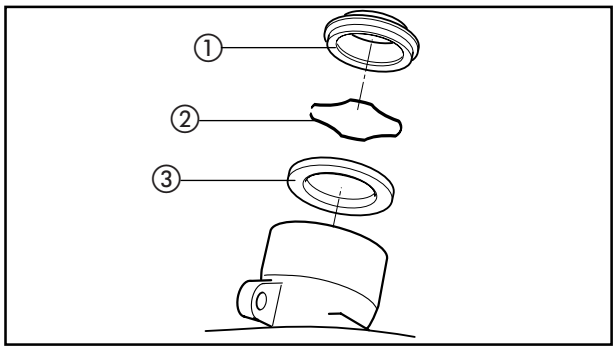
▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Hold the front fork leg horizontally.
b. Securely clamp the brake caliper bracket in a vice with soft jaws.
c. Separate the inner tube from the outer tube by pulling the inner tube forcefully but carefully.

CAUTION:

• Excessive force will damage the oil seal and bushing. A damaged oil seal or bushing must be replaced.
• Avoid bottoming the inner tube into the outer tube during the above procedure, as the oil flow stopper will be damaged.

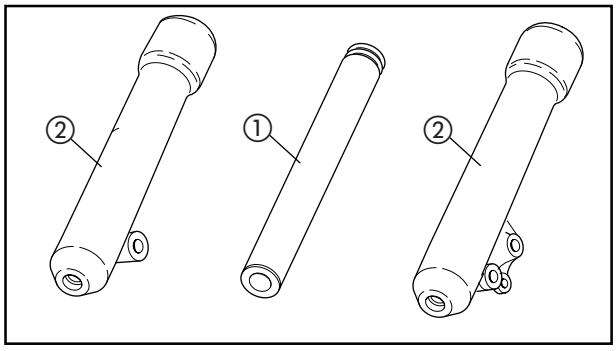
▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲



6. Remove:
   • Dust seal ①
   • Retaining clip ②
   • Oil seal ③

CAUTION:

Do not scratch the inner tube.



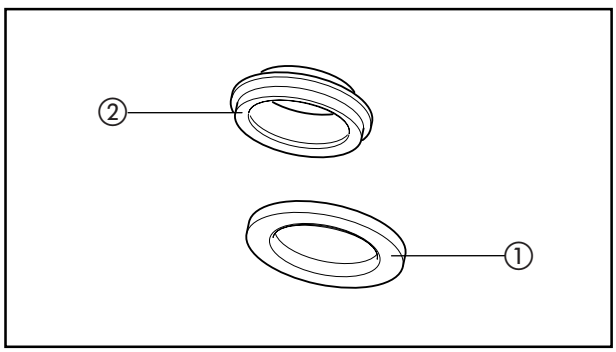
EAS00657
CHECKING THE FRONT FORK LEGS

The following procedure applies to both of the front fork legs.

1. Check:
   • inner tube ①
   • outer tube ②
   Bends/damage/scratches → Replace.

⚠ WARNING

Do not attempt to straighten a bent inner tube as this may dangerously weaken it.



2. Check:
   • oil seal ①
   • Dust seal ②
   Damage → Replace.

CAUTION:
- **The front fork leg has a built-in damper adjusting rod and a very sophisticated internal construction, which are particularly sensitive to foreign material.**
- **When disassembling and assembling the front fork leg, do not allow any foreign material to enter the front fork.**

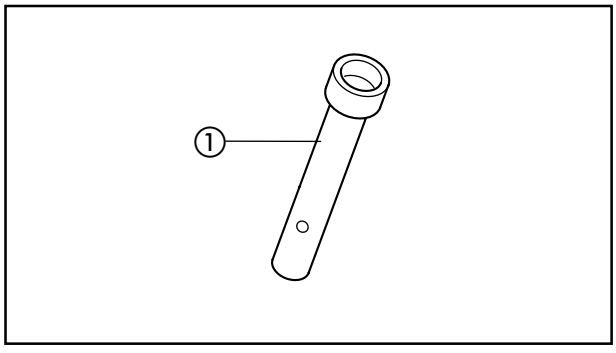
3. Check:
   - cap bolt O-ring
     Damage/wear → Replace.

EAS00661
ASSEMBLING THE FRONT FORK LEGS
The following procedure applies to both of the front fork legs.

⚠ WARNING
- **Make sure the oil levels in both front fork legs are equal.**
- **Uneven oil levels can result in poor handling and a loss of stability.**

NOTE:
When assembling the front fork leg, be sure to replace the following parts:
- oil seal
- dust seal

Before assembling the front fork leg, make sure all of the components are clean.



1. Install:
   - piston ①

⚠ WARNING
Always use new copper washers.

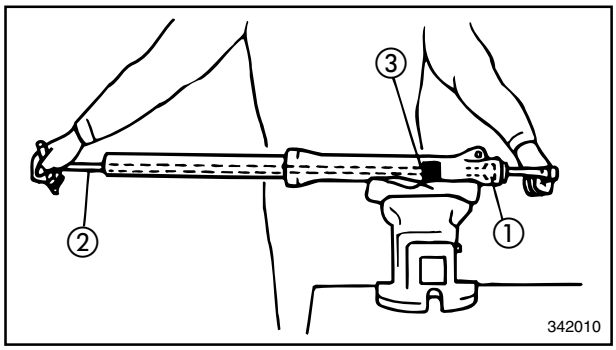
CAUTION:
Allow the damper rod assembly to slide slowly down the inner tube until it protrudes from the bottom of the inner tube. Be careful not to damage the inner tube.

2. Lubricate:
   • inner tube's outer surface

Recommended lubricant
Yamaha fork and fork oil SAE 10 or equivalent

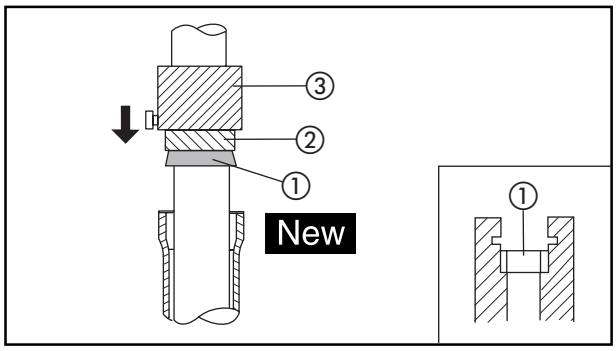
3. Tighten:
   • damper rod assembly bolt

23 Nm (2.3m•kg)



NOTE:
While holding the damper rod assembly ① with the damper rod holder ②, tighten the damper rod assembly bolt.

Damper rod holder ③
90890-01294
T-handle ②
90890-01326



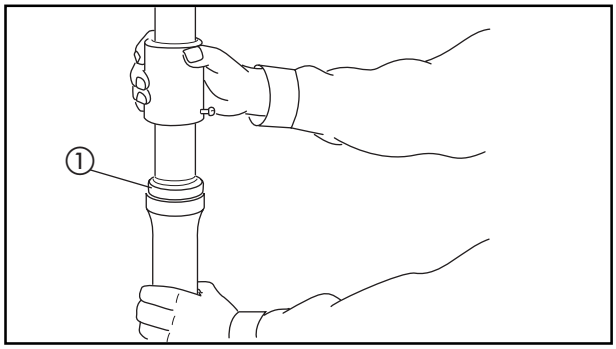
4. Install:
   • outer tube bushing ①
   (with the fork seal driver weight ③ and adapter ②)

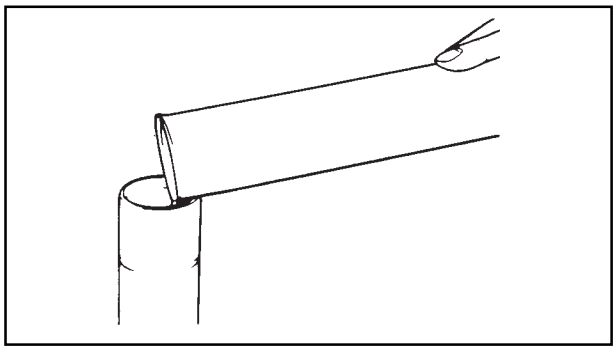
Fork seal driver weight
90890-01367
Fork seal driver attachment
90890-01368

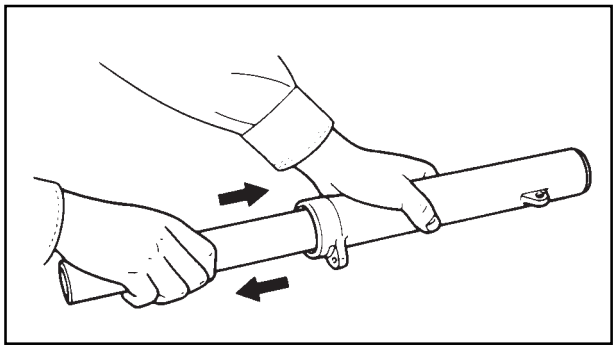
5. Install:
   • washer
   • oil seal
   (with the fork seal driver weight and adapter)

CAUTION:
Make sure the numbered side of the oil seal faces up.

NOTE:
- Before installing the oil seal, lubricate its lips with lithium soap base grease.
- Lubricate the outer surface of the inner tube with fork oil.
- Before installing the oil seal, cover the top of the front fork leg with a plastic bag to protect the oil seal during installation.







6. Install:
   • oil seal clip

NOTE:
Adjust the oil seal clip so that it fits into the groove of the outer tube.

7. Install:
   • dust seal ①
   (with the fork seal driver weight)
8. Fully compress the front fork leg.

9. Fill:
   • front fork leg
   (with the specified amount of the recommended fork oil)

Quantity (each front fork leg)
0.125 L
Recommended oil
Yamaha fork and fork oil SAE 20 or equivalent

CAUTION:
- **Be sure to use the recommended fork oil. Other oils may have an adverse effect on front fork performance.**
- **When disassembling and assembling the front fork leg, do not allow any foreign material to enter the front fork.**

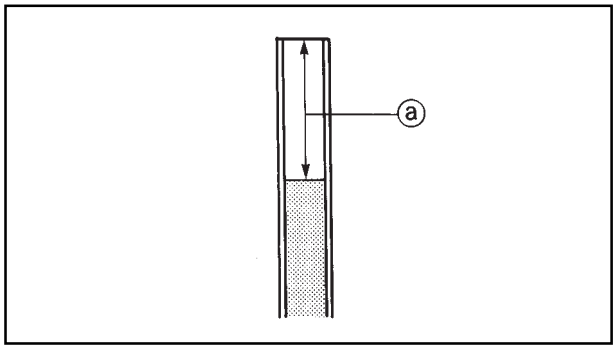
10. After filling the front fork leg, slowly stroke the damper rod up and down (at least ten times) to distribute the fork oil.

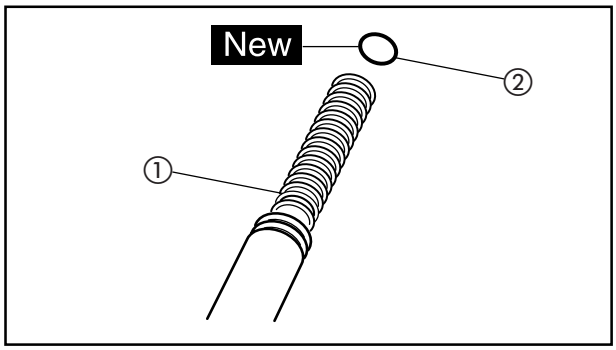
NOTE:
Be sure to stroke the damper rod slowly because the fork oil may spurt out.

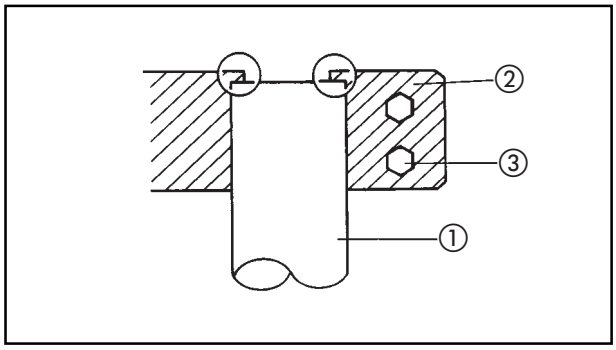
11. Slowly stroke the inner tube up and down to distribute the fork oil once more (1 stroke = about 150 mm).

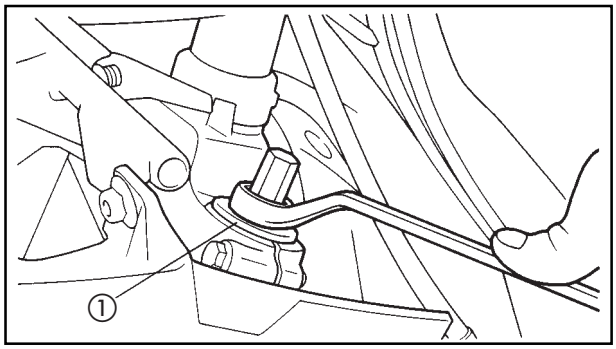
NOTE:
Be careful not to stroke the inner tube over 150 mm as this will cause air to enter. If the inner tube is stroked more than 150 mm, repeat steps (12) and (13).

12. Before measuring the fork oil level, wait ten minutes until the oil has settled and the air bubbles have dispersed.









NOTE:
Be sure to bleed the front fork leg of any residual air.

13. Measure:
- front fork leg oil level ⓐ
  Out of specification → Correct.

Front fork leg oil level (from the top of the inner tube, with the inner tube fully compressed, and without the spring)
80 mm

14. Install:
- spring ①

NOTE:
Install the spring with its denser of pitch to upper side.

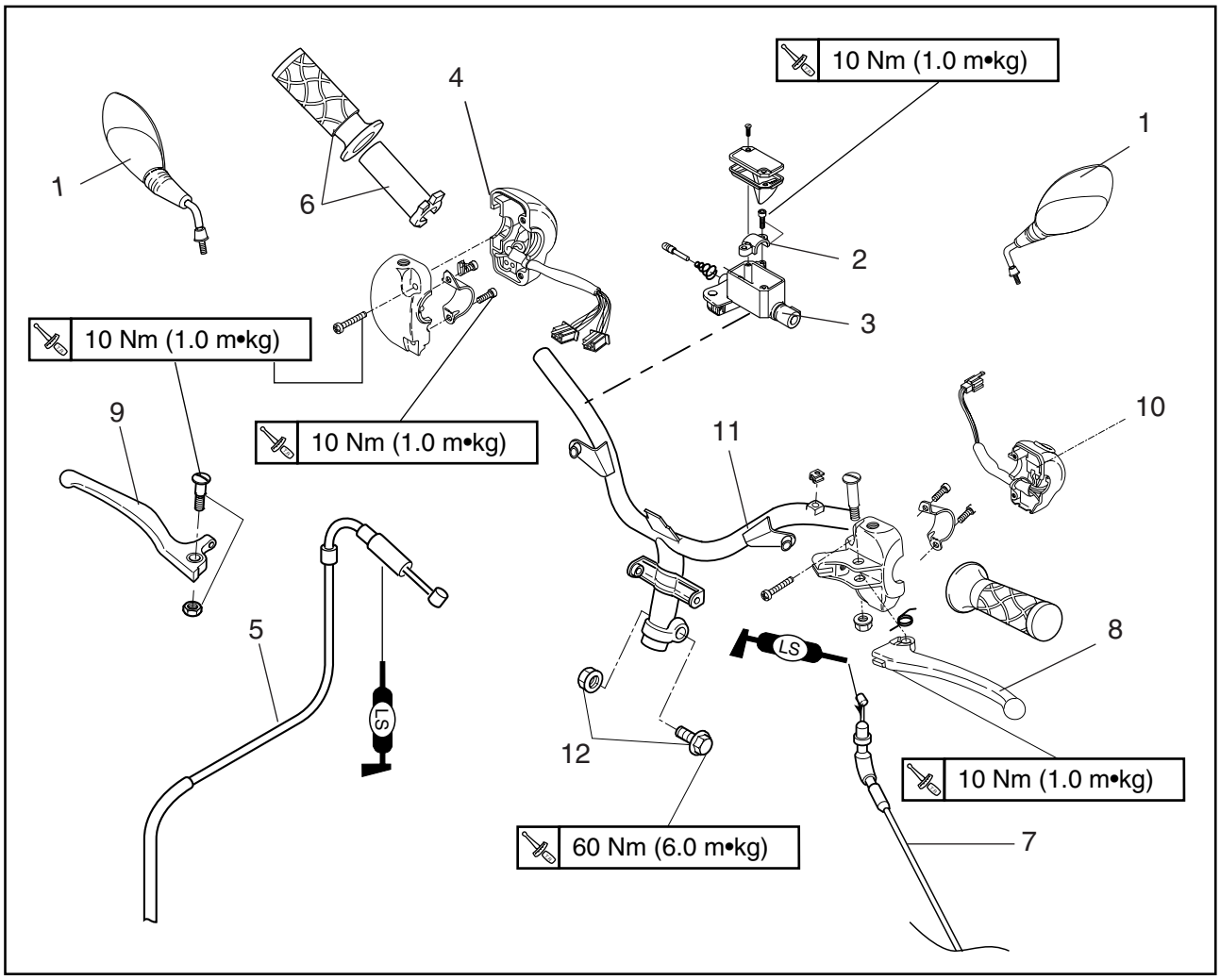
- O-ring ② New

EAS00663
INSTALLING THE FRONT FORK LEGS
The following procedure applies to both of the front fork legs.
1. Install:
- front fork leg ①
- cap bolt
- under bracket ②
- bracket bolt ③

NOTE:
Pull up the inner tube until it stops, then install the cap bolt.

2. Tighten:
- cap bolt ① **45 Nm (4.5m•kg)**
- lower bracket pinch bolt **33 Nm (3.3m•kg)**

EASM0047
HANDLEBAR



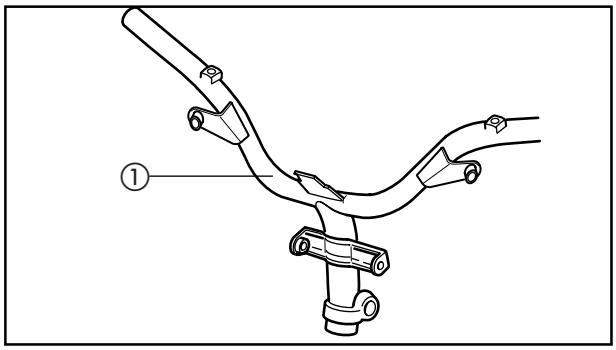
Order	Job/Part	Q'ty	Remarks
	Removing the handlebar Handlebar covers		Remove the parts in the order listed. Refer to "HANDLEBAR COVERS" section in chapter 3.
1	Rear view mirror (right and left)	2	
2	Master cylinder boot	1	
3	Master cylinder	1	
4	Handlebar switch (right)	1	
5	Throttle cable	1	
6	Grip assembly	1	
7	Rear brake cable	1	
8	Brake lever holder (left)	1	
9	Brake lever holder (right)	1	
10	Handlebar switch (left)	1	
11	Handlebar	1	
12	Bolt/nut	1/1	
			For installation, reverse the removal procedure.

EAS00668
CHECKING THE HANDLEBAR

1. Stand the scooter on a level surface.

⚠ WARNING

Securely support the scooter so that there is no danger of it falling over.



2. Check:
   - handlebar ①

   Bends/cracks/damage → Replace.

⚠ WARNING

Do not attempt to straighten a bent handlebar as this may dangerously weaken it.

3. Install:
   - handlebar grip

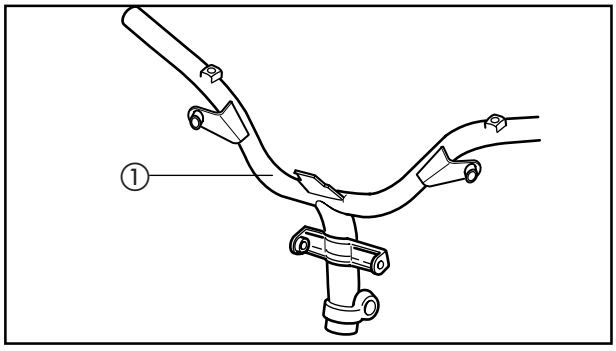
▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Apply a thin coat of rubber adhesive onto the left end of the handlebar.
b. Slide the handlebar grip over the left end of the handlebar.
c. Wipe off any excess rubber adhesive with a clean rag.

⚠ WARNING

Do not touch the handlebar grip until the rubber adhesive has fully dried.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲



EAS00673
INSTALLING THE HANDLEBAR

1. Stand the scooter on a level surface.

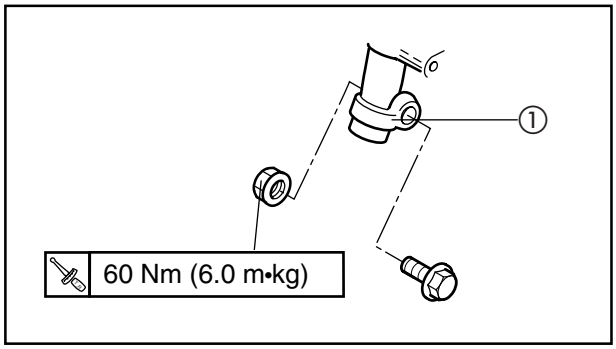
⚠ WARNING

Securely support the scooter so that there is no danger of it falling over.

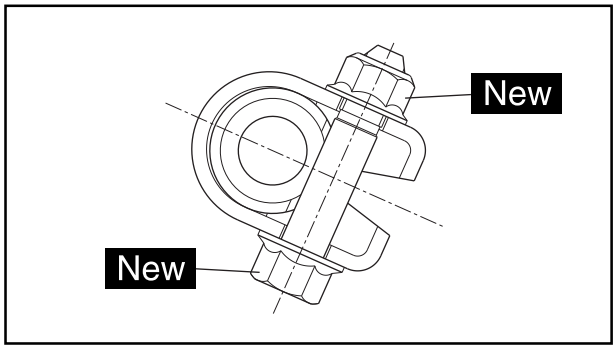
2. Install:
   - handlebar ①

NOTE:

Align the slot in the handlebar with the steering shaft surface.



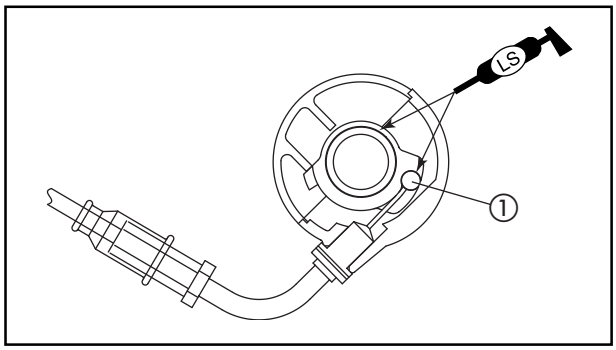
3. Tighten:
   - nut ① **60 Nm (6.0m•kg)**
4. Fasten:
   - wire harness
5. Install:
   - left handlebar switch



NOTE:
Align the projection on the left handlebar switch with the hole in the handlebar.

6. Install:
   • brake lever holder

NOTE:
Align the mating surfaces of the brake lever holder with the punch mark a in the handlebar.



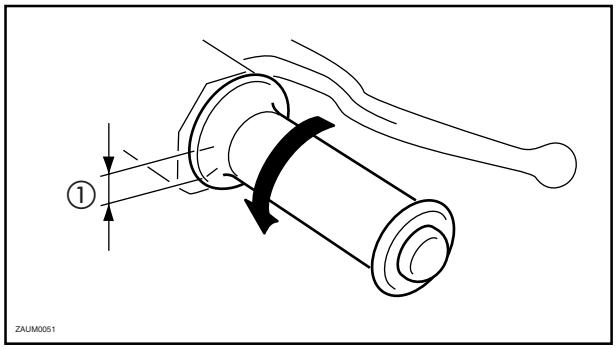
7. Install:
   • throttle cable ①
   • throttle grip

NOTE:
Lubricate the inside of the throttle grip with a thin coat of lithium soap base grease and install it onto the handlebar.

8. Install:
   • right handlebar switch

⚠ WARNING
Make sure the throttle grip operates smoothly.

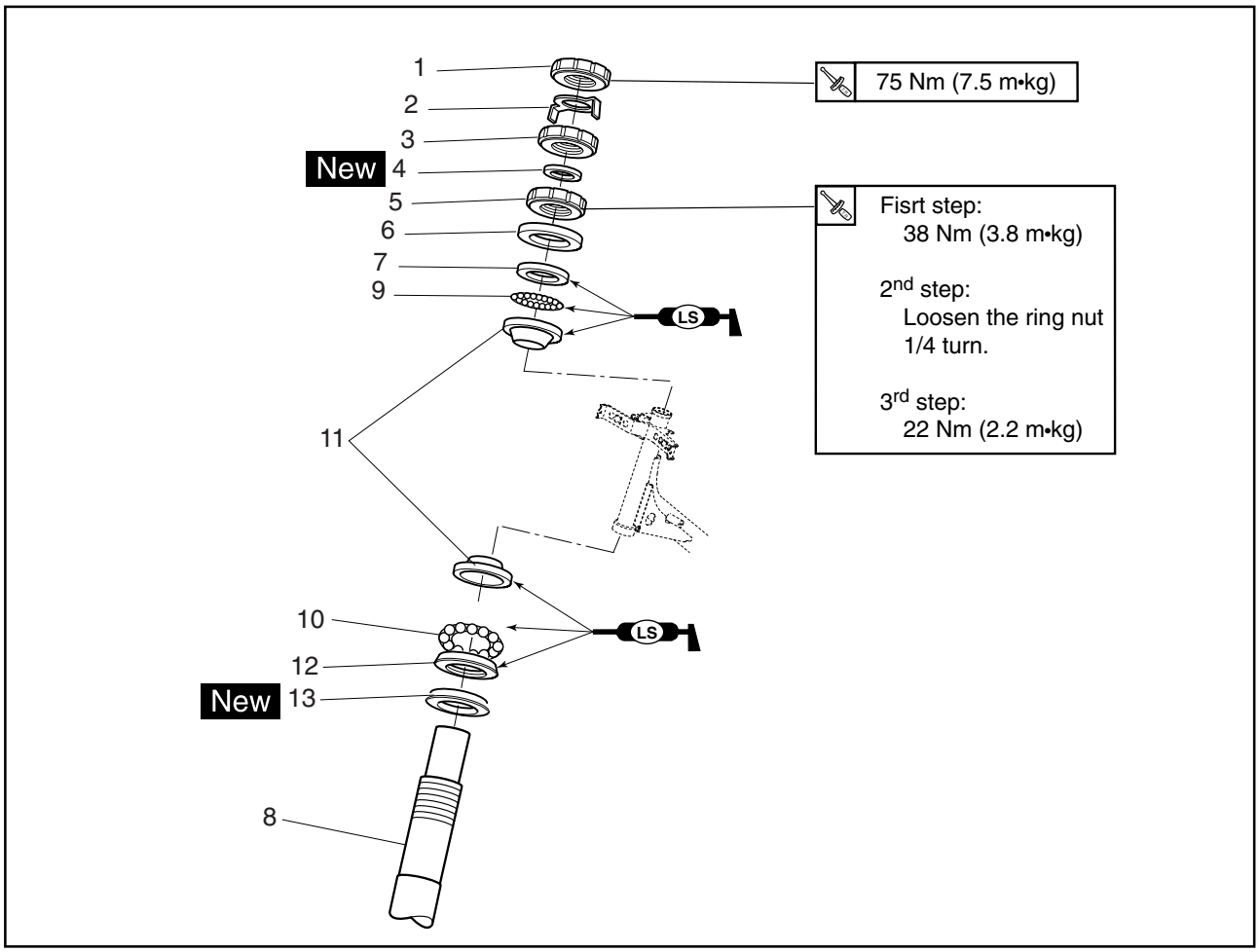
NOTE:
- Align the projection on the right handlebar switch with the hole a in the handlebar.
- There should be 2.5 mm of clearance between the throttle grip and the right grip end .



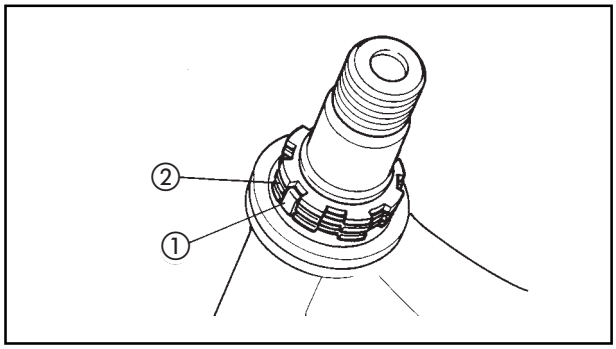
9. Adjust:
   • throttle cable free play ①
   Refer to "ADJUSTING THE THROTTLE CABLE FREE PLAY" in chapter 3.

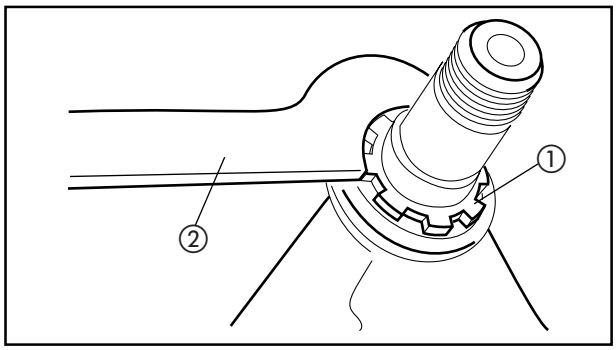
Throttle cable free play
(at the flange of the throttle grip)
1.5 ~ 3.0 mm

EASM0048
STEERING HEAD



Order	Job/Part	Q'ty	Remarks
	Removing the steering head		Remove the parts in the order listed.
	Front covers		Refer to "FRONT COVERS" section in chapter 3.
	Front wheel		Refer to "FRONT WHEEL" section.
	Front fork legs		Refer to "FRONT FORK" section.
	Handlebar		Refer to "HANDLEBAR" section.
1	Ring nut	1	
2	Lock washer	1	
3	Ring nut (middle)	1	
4	Rubber washer	1	
5	Ring nut (lower)	1	
6	Ball race cover		
7	Ball race (upper)	1	
8	Lower bracket	1	
9	Ball bearing	22	
10	Bearing	1	
11	Ball races (in lower bracket)	2	
12	Ball race (lower)	1	
13	Steering oil seal	1	For installation, reverse the removal procedure.





EAS00678
REMOVING THE LOWER BRACKET

1. Stand the scooter on a level surface.

⚠ WARNING

Securely support the scooter so that there is no danger of it falling over.

2. Remove:
   - ring nut (upper)
   - lock washer ①
   - ring nut (center) ②
   - rubber washer
3. Remove:
   - ring nut (lower) ①

NOTE:

Hold the lower bracket by hand, then remove by using the exhaust ring and steering nut wrench ②.

	Ring nut wrench **90890-01268**

⚠ WARNING

Securely support the steering shaft so that there is no danger of it falling down.

EAS00681
CHECKING THE STEERING HEAD

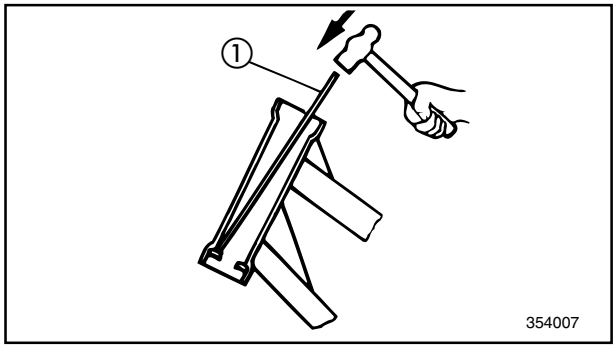
1. Wash:
   - bearings
   - bearing races

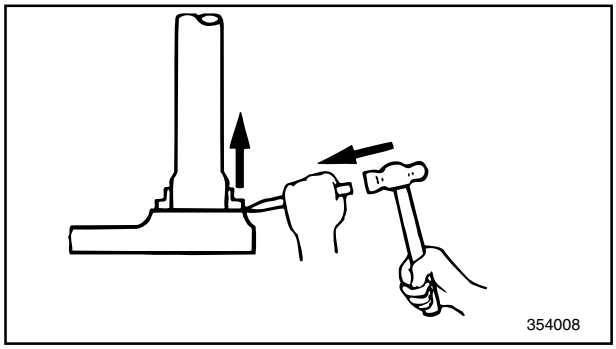
	Recommended cleaning solvent **Kerosene**

2. Check:
   - bearings
   - bearing races

   Damage/pitting → Replace.
3. Replace:
   - bearings
   - bearing races

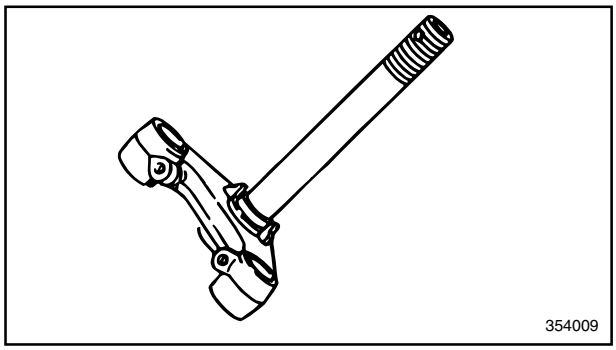
a. Remove the bearing races from the steering head pipe with a long rod ① and hammer.
b. Remove the bearing race from the lower bracket with a floor chisel and hammer.
c. Install a new rubber seal and new bearing races.



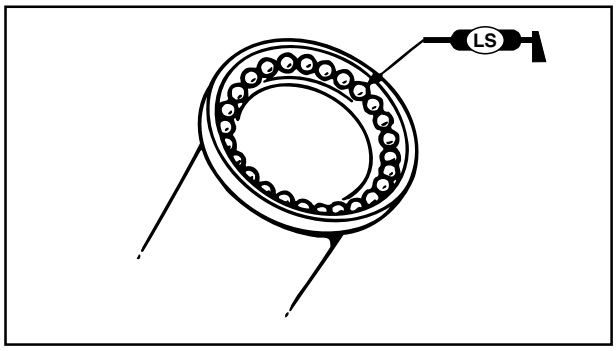


CAUTION:
If the bearing race is not installed properly, the steering head pipe could be damaged.

NOTE:
- Always replace the bearings and bearing races as a set.
- Whenever the steering head is disassembled, replace the rubber seal.



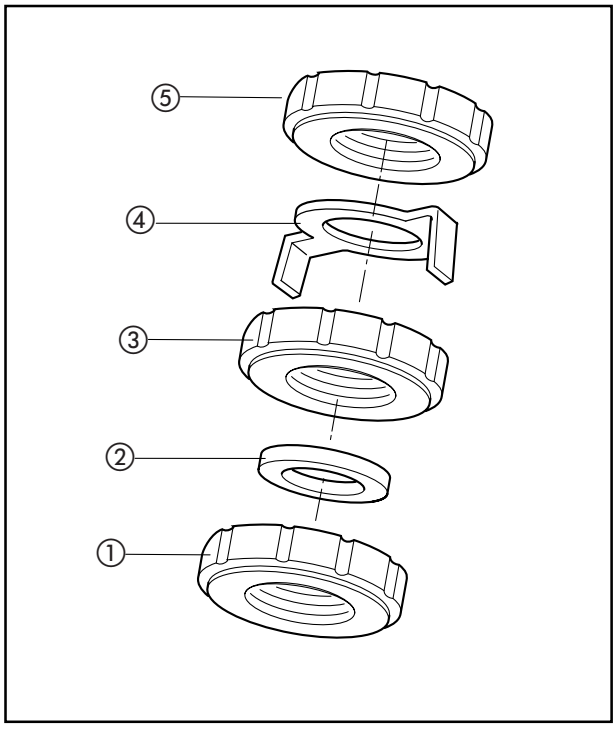
4. Check:
   - lower bracket
     (along with the steering stem)
     Bends/cracks/damage → Replace.



EAS00684
INSTALLING THE STEERING HEAD

1. Lubricate:
   - upper bearing
   - lower bearing
   - bearing races

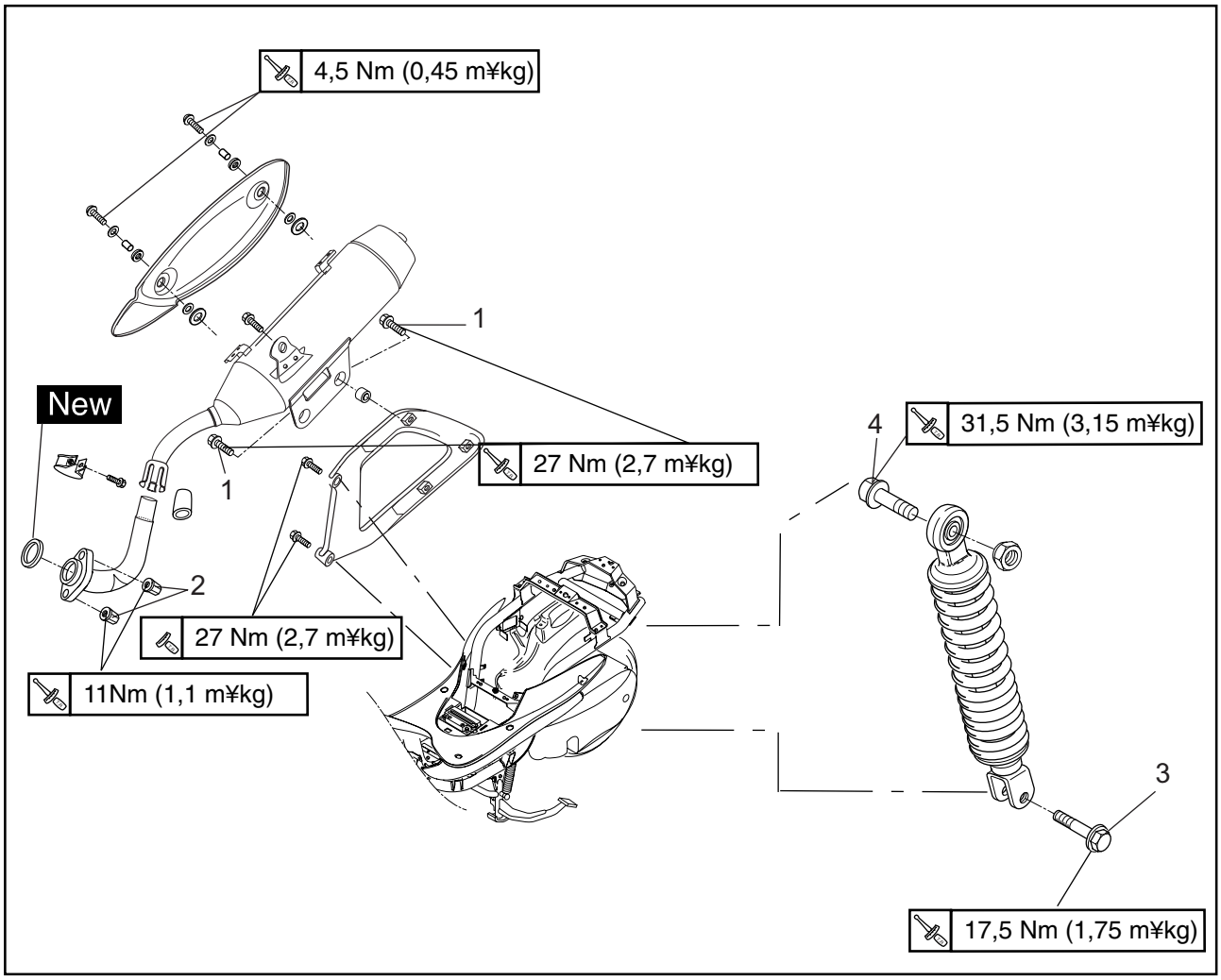
	Recommended lubricant **Lithium soap base grease**



2. Install:
   - lower ring nut ①
   - rubber washer ②
   - ring nut ③
   - lock washer ④
   - upper ring nut ⑤

   Refer to "CHECKING AND ADJUSTING THE STEERING HEAD" section in chapter 3.
3. Install:
   - handlebar
   - bolt
   - nut **60 Nm (6.0m•kg)**

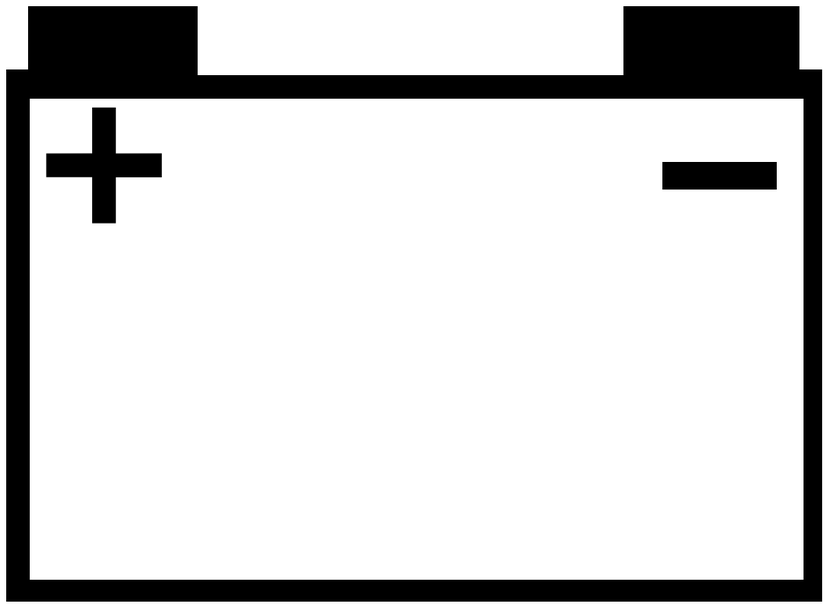
EASM0049
REAR SHOCK ABSORBER AND EXHAUST PIPE



Order	Job/Part	Q'ty	Remarks
	Removing the rear shock absorber and exhaust pipe		Remove the parts in the order listed.
	Side covers		Refer to "SIDE COVERS AND SEAT" section in chapter 3.
	Box	1	
1	Exhaust pipe bolt (bracket)	2	**27 Nm (2.7m•kg)**
2	Exhaust pipe nut (engine)	2	**11 Nm (1.1m•kg)**
3	Rear shock absorber bolt (engine)	1	**17.5 Nm (1.75m•kg)**
4	Rear shock absorber bolt (frame)	1	**31.5 Nm (3.15m•kg)**
			For installation, reverse the removal procedure.

EAS00695
CHECKING THE REAR SHOCK ABSORBER ASSEMBLY

1. Check:
   - rear shock absorber rod
     Bends/damage → Replace the rear shock absorber assembly.
   - rear shock absorber
     Oil leaks → Replace the rear shock absorber assembly.
   - spring
     Damage/wear → Replace the rear shock absorber assembly.
   - bushings
     Damage/wear → Replace.
   - dust seals
     Damage/wear → Replace.
   - bolts
     Bends/damage/wear → Replace.



ELEC 8

CHAPTER 8.
ELECTRICAL

ELECTRICAL COMPONENTS 8-1

SWITCHES 8-2
CHECKING SWITCH CONTINUITY 8-2

CHECKING THE SWITCHES 8-3

CHECKING THE BULBS AND BULB SOCKETS 8-4
TYPES OF BULBS 8-4
CHECKING THE CONDITION OF THE BULBS 8-4
CHECKING THE CONDITION OF THE BULB SOCKETS 8-6

IGNITION SYSTEM 8-7
CIRCUIT DIAGRAM 8-7
TROUBLESHOOTING 8-8

ELECTRIC STARTING SYSTEM 8-11
CIRCUIT DIAGRAM 8-11
TROUBLESHOOTING 8-12

STARTER MOTOR 8-14
CHECKING THE STARTER MOTOR 8-16
ASSEMBLING THE STARTER MOTOR 8-17

CHARGING SYSTEM 8-19
CIRCUIT DIAGRAM 8-19
TROUBLESHOOTING 8-20

LIGHTING SYSTEM 8-22
CIRCUIT DIAGRAM 8-22
TROUBLESHOOTING 8-23
CHECKING THE LIGHTING SYSTEM 8-24

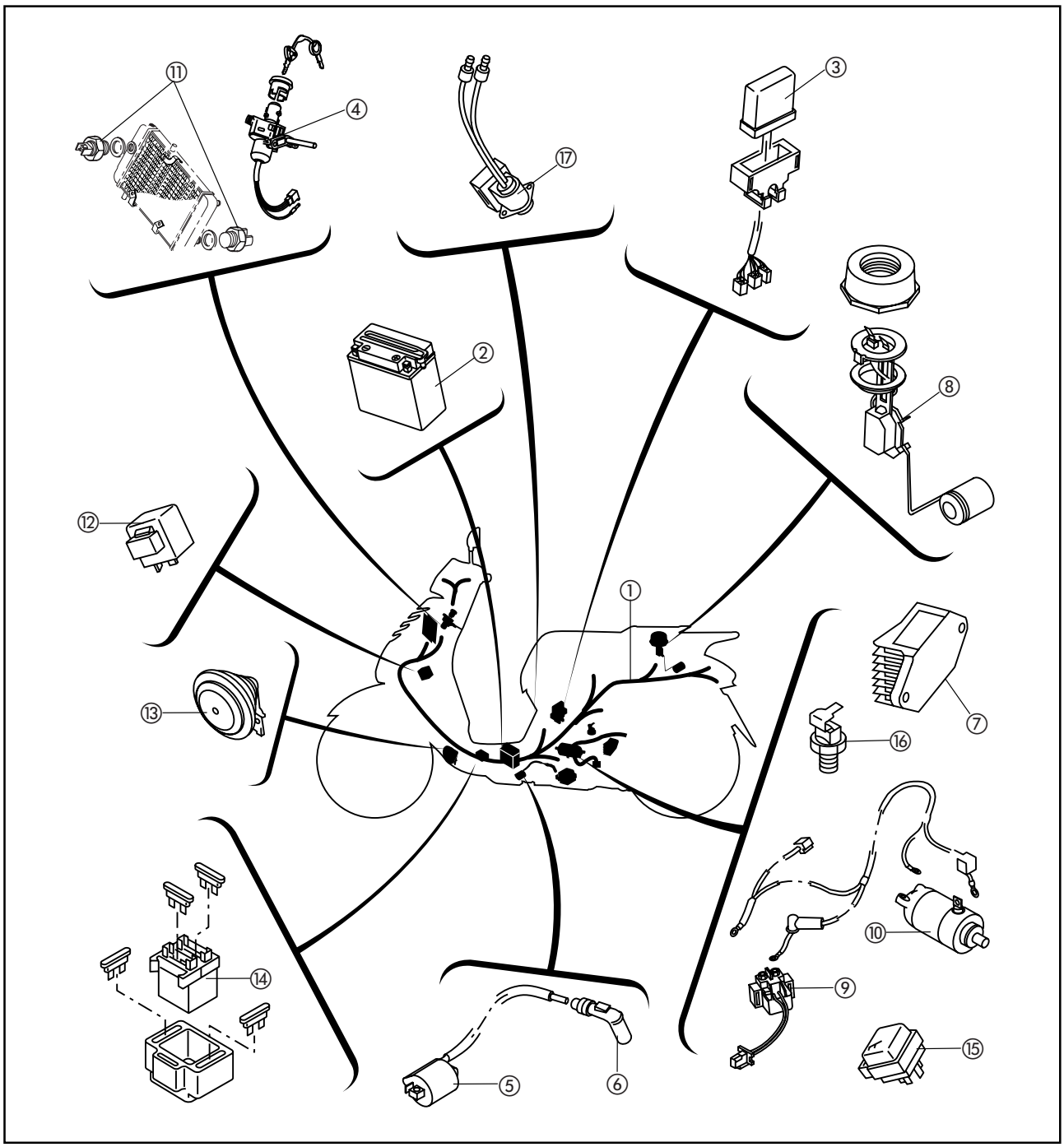
SIGNALING SYSTEM 8-27
CIRCUIT DIAGRAM 8-27
TROUBLESHOOTING 8-29
CHECKING THE SIGNALING SYSTEM 8-30

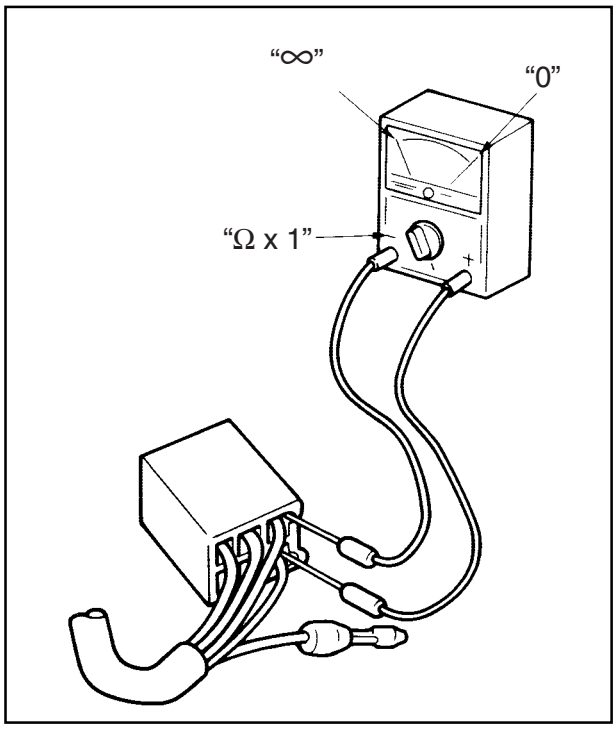
COOLING SYSTEM 8-36
CIRCUIT DIAGRAM 8-36
TROUBLESHOOTING 8-37

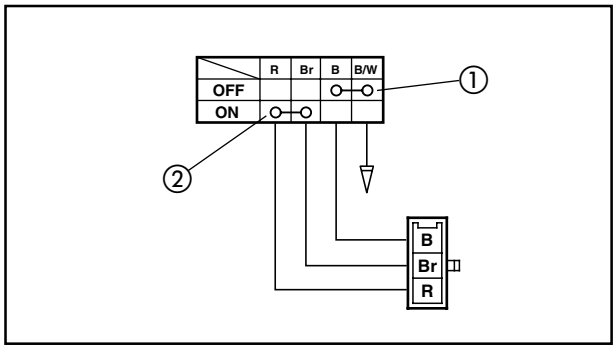
CARBURETOR HEATING SYSTEM 8-40
CIRCUIT DIAGRAM 8-40
TROUBLESHOOTING 8-41

ELECTRICAL COMPONENTS

① Wire harness
② Battery
③ Ignition unit (CDI)
④ Main switch
⑤ Ignition coil
⑥ Spark plug cap
⑦ Rectifier/Regulator
⑧ Fuel sender
⑨ Starter relay
⑩ Starter motor
⑪ Thermo switch
⑫ Flasher relay
⑬ Horn
⑭ Fuses
⑮ Relays
⑯ Coolant thermo switch
⑰ Carburator heater thermo switch







EAS00730

SWITCHES

CHECKING SWITCH CONTINUITY

Check each switch for continuity with the pocket tester. If the continuity reading is incorrect, check the wiring connections and if necessary, replace the switch.

CAUTION:

Never insert the tester probes into the coupler terminal slots a. Always insert the probes from the opposite end of the coupler, taking care not to loosen or damage the leads.

	Pocket tester **90890-03112**

NOTE:

- Before checking for continuity, set the pocket tester to "0" and to the "x 1Ω" range.
- When checking for continuity, switch back and forth between the switch positions a few times.
- The terminal connections for switches (e.g., main switch, engine stop switch) are shown in an illustration similar to the one on the left.
- The switch positions a are shown in the far left column and the switch lead colors b are shown in the top row in the switch illustration.

NOTE:

"○—○" indicates a continuity of electricity between switch terminals (i.e., a closed circuit at the respective switch position).

The example illustration on the left shows that:

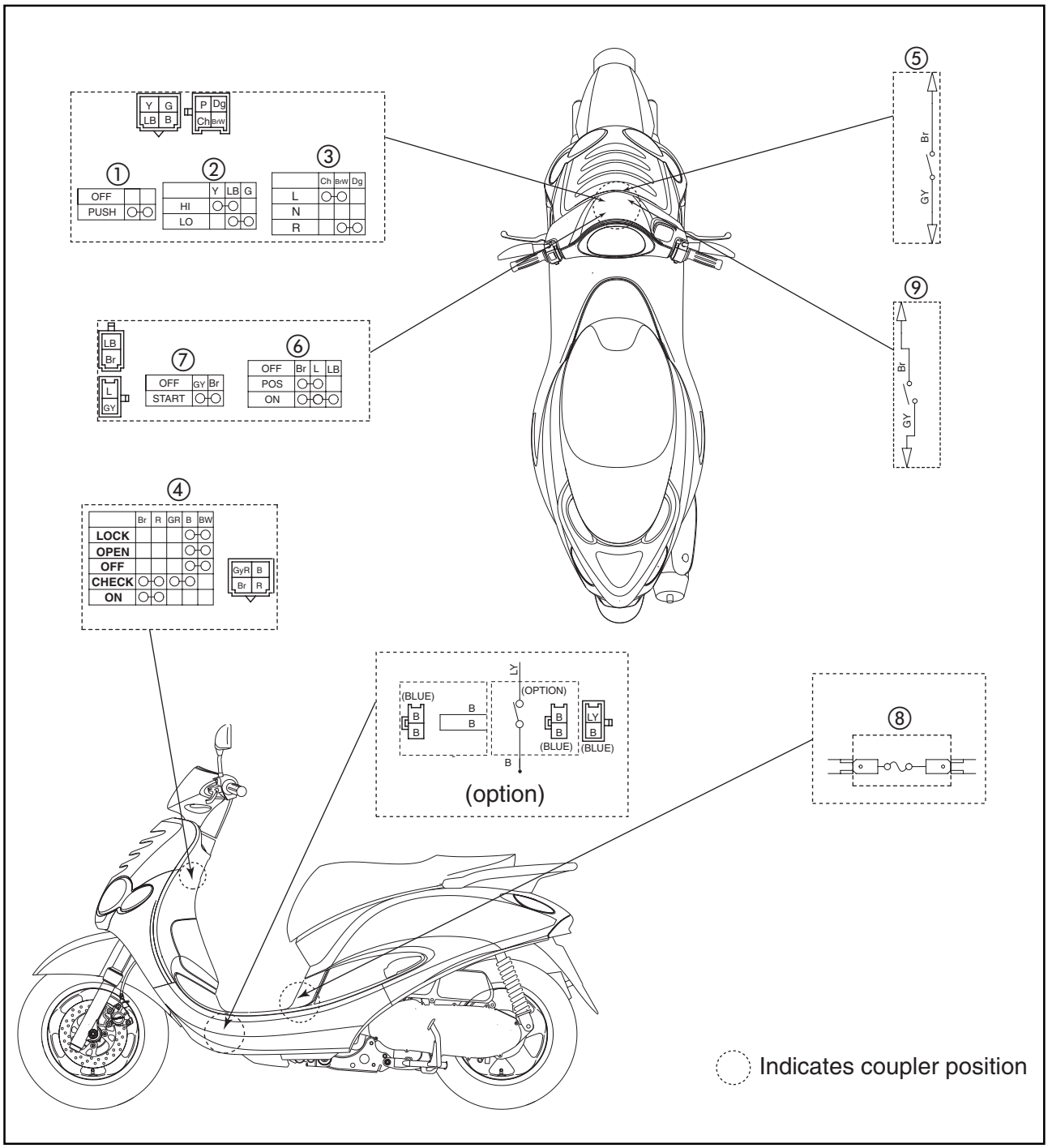
There is continuity between "black" and "black/white" ① when the switch is set to "OFF".

There is continuity between "red" and "brown" ② when the switch is set to "ON".

EAS00731
CHECKING THE SWITCHES

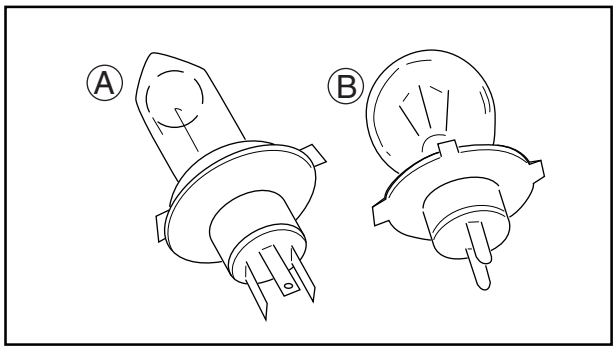
Check each switch for damage or wear, proper connections, and also for continuity between the terminals. Refer to "CHECKING SWITCH CONTINUITY" section.
Damage/wear → Repair or replace.
Improperly connected → Properly connect.
Incorrect continuity reading → Replace the switch.

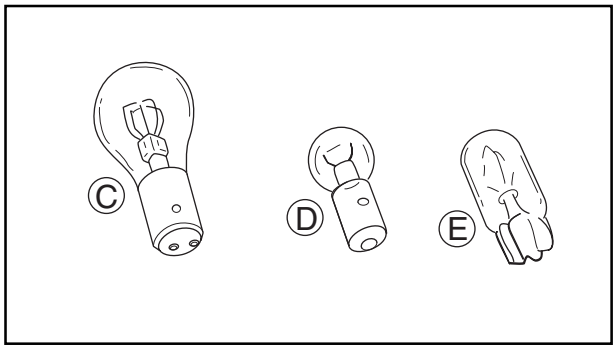
① Horn switch
② Dimmer switch
③ Turn signal switch
④ Main switch
⑤ Front brake light switch
⑥ Light switch
⑦ Start switch
⑧ Fuses
⑨ Rear brake light switch



EAS00733
CHECKING THE BULBS AND BULB SOCKETS

Check each bulb and bulb socket for damage or wear, proper connections, and also for continuity between the terminals.
Damage/wear → Repair or replace the bulb, bulb socket or both.
Improperly connected → Properly connect.
No continuity → Repair or replace the bulb, bulb socket or both.





TYPES OF BULBS

The bulbs used on this scooter are shown in the illustration on the left.

- Bulbs Ⓐ and Ⓑ are used for the headlights and usually use a bulb holder which must be detached before removing the bulb. The majority of these types of bulbs can be removed from their respective socket by turning them counterclockwise.
- Bulb Ⓒ is used for turn signal and tail/brake lights and can be removed from the socket by pushing and turning the bulb counterclockwise.
- Bulbs Ⓓ and Ⓔ are used for meter and indicator lights and can be removed from their respective socket by pushing and turning the bulb conterclockwise for Ⓓ and carefully pulling them out for Ⓔ.

CHECKING THE CONDITION OF THE BULBS

The following procedure applies to all of the bulbs.

1. Remove:
   - bulb

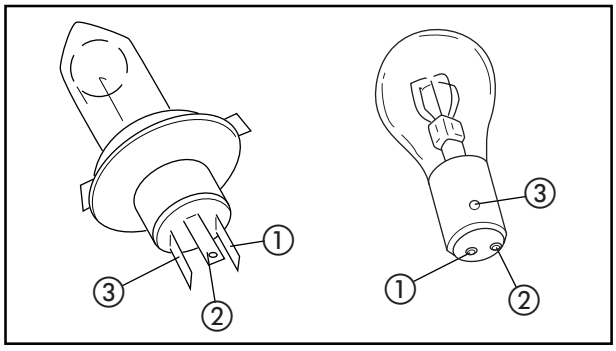
⚠ WARNING

Since the headlight bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.

CAUTION:

- **Be sure to hold the socket firmly when removing the bulb. Never pull the lead, otherwise it may be pulled out of the terminal in the coupler.**
- **Avoid touching the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb, and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.**

2. Check:
   - bulb (for continuity)
     (with the pocket tester)
     No continuity → Replace.



Pocket tester
90890-03112

NOTE:

Before checking for continuity, set the pocket tester to "0" and to the "x 1 Ω" range.

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Connect the positive tester probe to terminal ① and the negative tester probe to terminal ③, and check the continuity.
b. Connect the positive tester probe to terminal ② and the negative tester probe to terminal ③, and check the continuity.
c. If either of the readings indicate no continuity, replace the bulb.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

CHECKING THE CONDITION OF THE BULB SOCKETS

The following procedure applies to all of the bulb sockets.

1. Check:
   bulb socket (for continuity)
   (with the pocket tester)
   No continuity → Replace.

Pocket tester
90890-03112

NOTE:

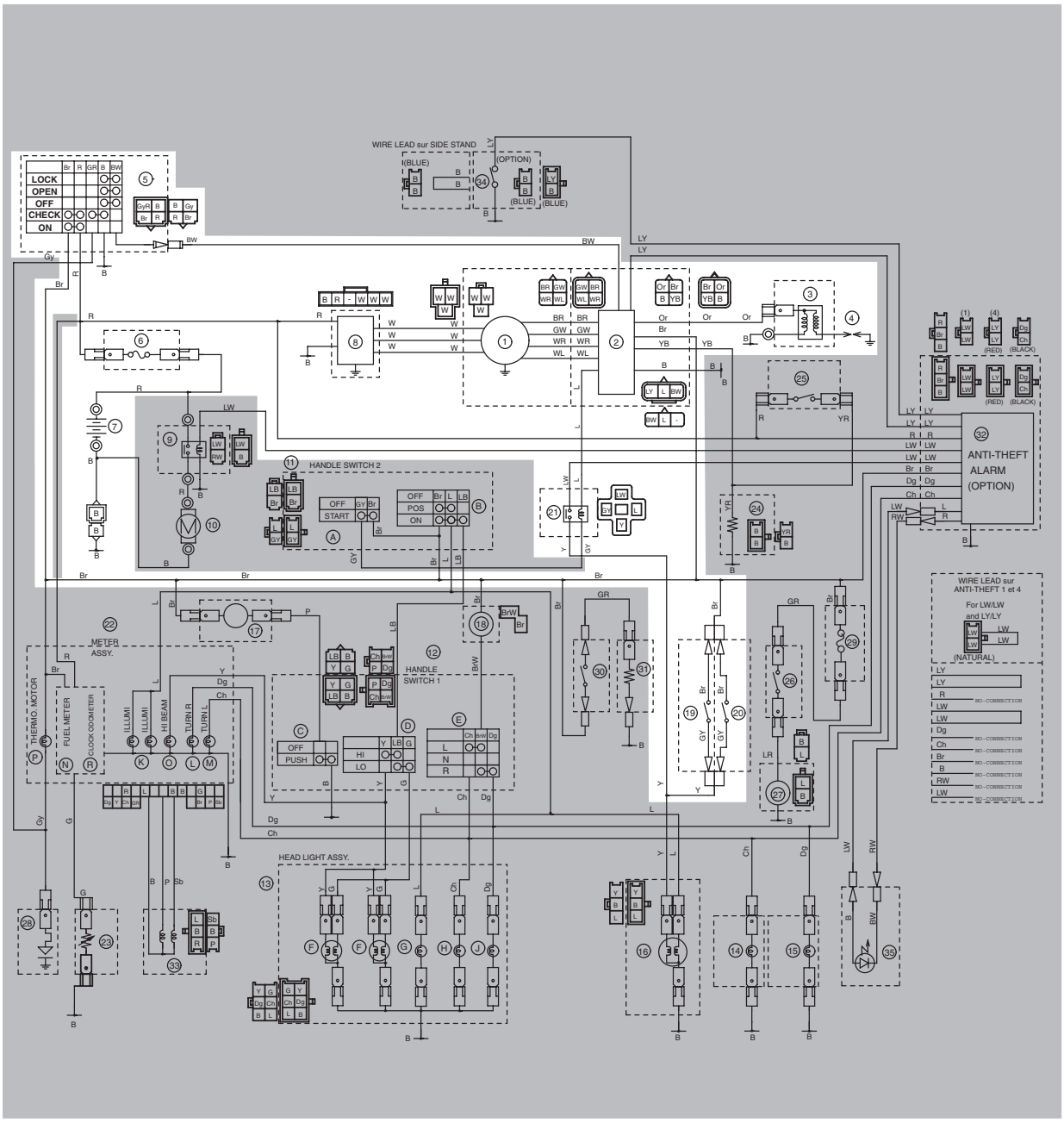
Check each bulb socket for continuity in the same manner as described in the bulb section; however, note the following.

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

a. Install a good bulb into the bulb socket.
b. Connect the pocket tester probes to the respective leads of the bulb socket.
c. Check the bulb socket for continuity. If any of the readings indicate no continuity, replace the bulb socket.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲

EAS00734
IGNITION SYSTEM
CIRCUIT DIAGRAM



① CDI magneto
② CDI unit
③ Ignition coil
④ Spark plug
⑤ Main switch
⑥ Fuse (main)
⑦ Battery
⑲ Front brake stop switch
⑳ Rear brake stop switch
㉑ Relay

EAS00736
TROUBLESHOOTING

THE IGNITION SYSTEM FAILS TO OPERATE (NO SPARK OR INTERMITTENT SPARK).

Check:
1. Main fuse
2. Battery
3. Spark plug
4. Ignition spark gap
5. Spark plug cap resistance
6. Ignition coil resistance
7. Main switch
8. Pickup coil resistance
9. Wiring (of the entire ignition system)

NOTE:
- Before troubleshooting, remove the following part(s):

1) Side covers
2) Footrest board
3) Seat and box

- Troubleshoot with the following special tool(s).

Ignition checker
90890-06754
Pocket tester
90890-03112

EAS00738

1. Main fuse

- Check the main fuse for continuity.
- Refer to "CHECKING THE FUSES" in chapter 3.
- Is the main fuse OK?

YES → (no action)

NO → Replace the fuse.

EAS00739

2. Battery

- Check the condition of the battery. Refer to "CHECKING THE BATTERY" in chapter 3.

Minimum open-circuit voltage
12.8 V or more at 20°C

- Is the battery OK?

YES → (no action)

NO →
- Clean the battery terminals.
- Recharge or replace the battery.

EAS00740

3. Spark plug

- Check the condition of the spark plug.
- Check the spark plug type.
- Measure the spark plug gap.

Refer to "CHECKING THE SPARK PLUG" in chapter 3.

Standard spark plug
CR8E (NGK)
Spark plug gap
0.5 ~ 0.7 mm

- Is the spark plug in good condition, is it of the correct type, and is its gap within specification?

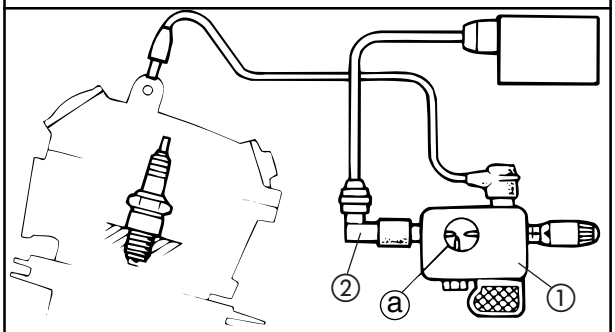
YES → (no action)

NO → Re-gap or replace the spark plug.

EAS00742

4. Ignition spark gap

- Disconnect the spark plug cap from the spark plug.
- Connect the ignition checker/dynamic spark tester ① as shown.
- ② Spark plug cap
- Set the main switch to "ON".
- Measure the ignition spark gap ⓐ.
- Crank the engine by pushing the starter switch and gradually increase the spark gap until a misfire occurs.



Minimum ignition spark gap
6 mm

- Is there a spark and is the spark gap within specification?

NO → YES

The ignition system is OK.

EAS00744

5. Spark plug cap resistance

- Remove the spark plug cap from the spark plug lead.
- Connect the pocket tester ("Ω X 1k" range) to the spark plug cap.
- Measure the spark plug cap resistance.

Spark plug cap resistance
10 x kΩ at 20°C

- Is the spark plug cap OK?

YES → NO

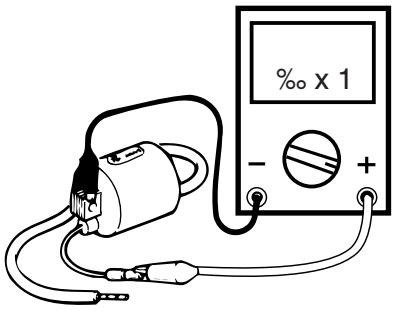
Replace the spark plug cap.

EAS00746

6. Ignition coil resistance

- Disconnect the ignition coil connectors from the ignition coil terminals.
- Connect the pocket tester (Ω X 1) to the ignition coil as shown.
- Measure primary coil resistance.

Positive tester probe → black
Negative tester probe → orange

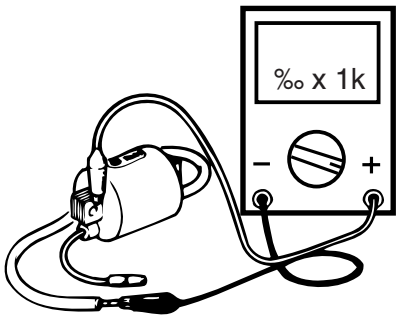


- Measure the primary coil resistance.

Primary coil resistance
0.32 ~ 0.48 Ω at 20°C

- Connect the pocket tester (Ω X 1k) to the ignition coil as shown.
- Measure the secondary coil resistance.

Negative tester probe → black
Positive tester probe → spark plug lead



- Measure the secondary coil resistance.

Secondary coil resistance
5.7 ~ 8.5 kΩ at 20°C

- Is the ignition coil OK?

YES → NO

Replace the ignition coil.

EAS00749

7. Main switch

- Check the main switch for continuity. Refer to “CHECKING THE SWITCHES”.
- Is the main switch OK?

YES

NO

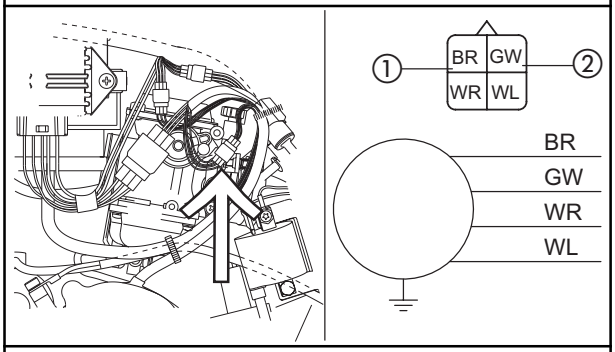
Replace the main switch.

EAS00748

8. Pickup coil resistance

- Disconnect the pickup coil coupler from the wire harness.
- Connect the pocket tester (Ω X 100) to the pickup coil terminal as shown.

Positive tester probe → red/black ①
Negative tester probe → green/white ②



- Measure the pickup coil resistance.

Pickup coil resistance
248 ~ 372 Ω at 20°C
(between white/red and white/green)

- Is the pickup coil OK?

YES

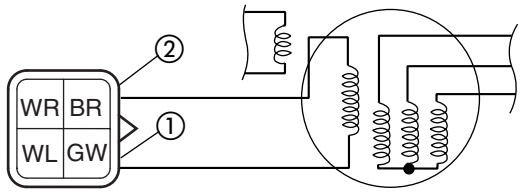
NO

Replace the stator.

9. Source coil resistance

- Disconnect the source coil coupler from the wire harness.
- Connect the pocket tester (Ω X 100) to the charging coil terminal as shown.

Positive tester probe → green/white ①
Negative tester probe → black/red ②



- Measure the source coil resistance.

Source coil resistance
720 ~ 1080 Ω at 20°C
(between brown/black and green/white)

- Is the source coil OK?

YES

NO

Replace the stator.

EAS00754

10. Wiring

- Check the entire ignition system’s wiring. Refer to “CIRCUIT DIAGRAM”.
- Is the ignition system’s wiring properly connected and without defects?

NO

YES

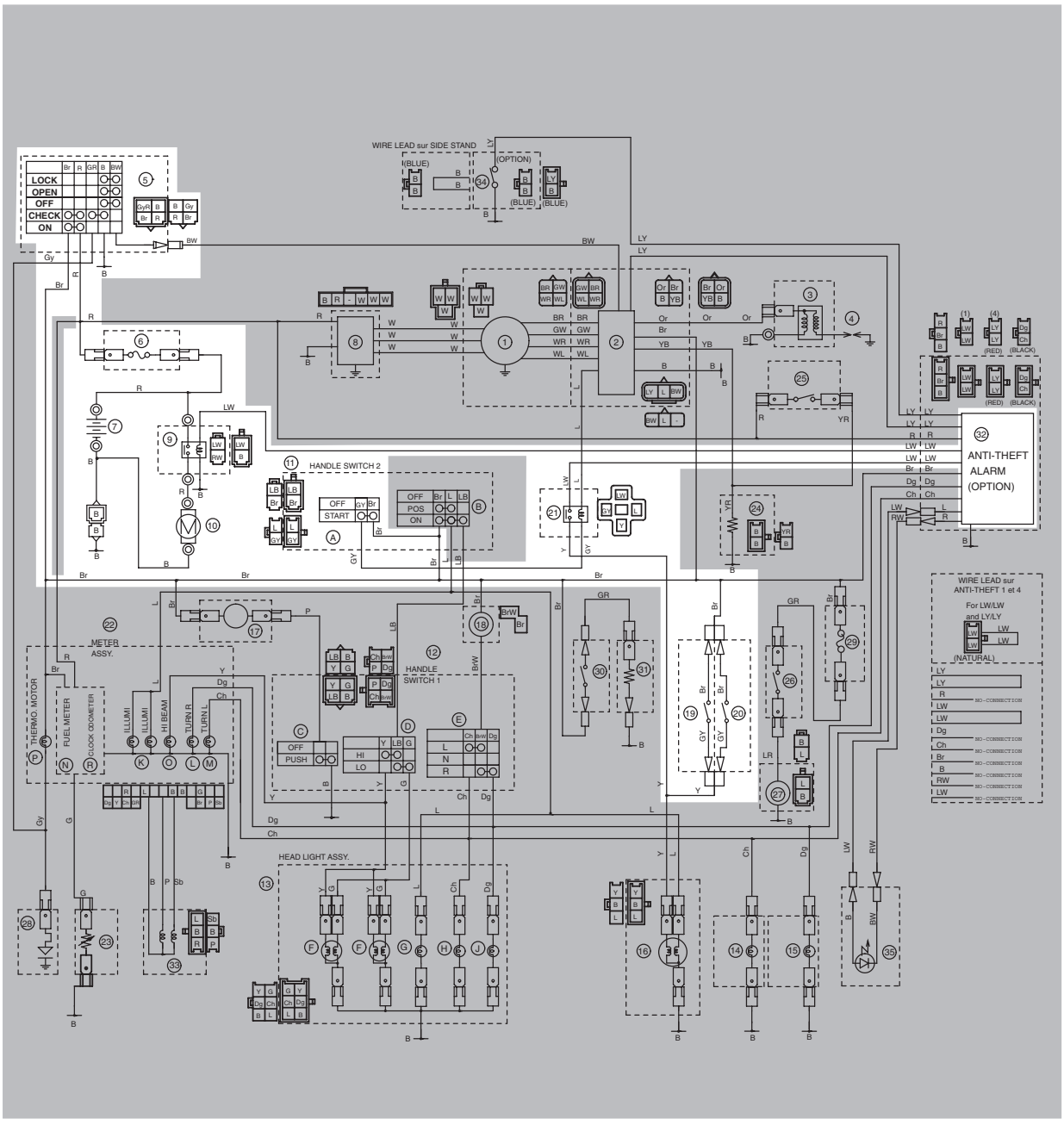
Properly connect or repair the ignition system’s wiring.

Replace the ignition unit. (CDI unit)

EAS00755

ELECTRIC STARTING SYSTEM

CIRCUIT DIAGRAM



⑤ Main switch
⑥ Fuse (main)
⑦ Battery
⑨ Starter relay
⑩ Starter motor
⑪ Ⓐ Starter switch
⑲ Front brake stop switch
⑳ Rear brake stop switch
㉑ Relay
㉜ Anti-theft alarm (option)

EAS00757
TROUBLESHOOTING

THE STARTER MOTOR FAILS TO TURN.

Check:
1. main fuse
2. battery
3. starter motor
4. starter relay
5. main switch
6. front/rear brake switch
7. starter switch
8. wiring (entire starting system)

NOTE:
Before troubleshooting, remove the following part(-s)
1) Side covers
2) Box and seat
Troubleshoot with the following special tool(-s).

Pocket tester
90890-03112

EAS00738
1. Main fuse
- Check the main fuse for continuity.
- Refer to "CHECKING THE FUSES" in chapter 3.
- Is the main fuse OK?

YES
NO
Replace the fuse.

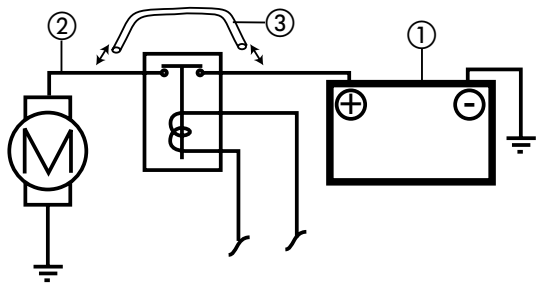
EAS00739
2. Battery
- Check the condition of the battery. Refer to "CHECKING THE BATTERY" in chapter 3.

Minimum open-circuit voltage
12.8 V or more at 20°C

- Is the battery OK?

YES
NO
- Clean the battery terminals.
- Recharge or replace the battery.

EAS00758
3. Starter motor
- Connect the positive battery terminal ① and starter motor lead ② with a jumper lead ③.



WARNING
- **A wire that is used as a jumper lead must have at least the same capacity or more as that of the battery lead, otherwise the jumper lead may burn.**
- **This check is likely to produce sparks, therefore make sure nothing flammable is in the vicinity.**

- Does the starter motor turn?

YES
NO
Repair or replace the starter motor.

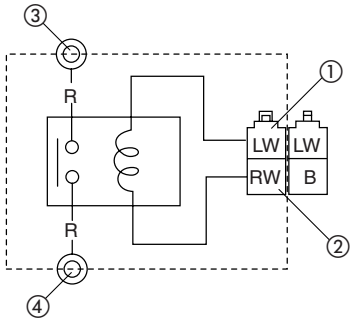
EAS00761

4. Starter relay

- Disconnect the starter relay coupler from the coupler.
- Connect the pocket tester (Ω X 1) and battery (12 V) to the starter relay coupler as shown.

Positive battery terminal → red/white ②
Negative battery terminal → blue/white ①

Positive tester probe → red ③
Negative tester probe → red ④



- Does the starter relay have continuity between red and black when it clicks?

YES → Replace the starter relay.

NO

EAS00749

5. Main switch

- Check the main switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the main switch OK?

YES

NO → Replace the main switch.

EASM0050

6. Front and Rear brake switch

- Check the front and rear switches for continuity. Refer to "CHECKING THE SWITCHES".
- Is the front and rear switches OK?

YES

NO → Replace the front or rear brake switch.

EAS00764

7. Starter switch

- Check the starter switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the starter switch OK?

YES

NO → Replace the right handlebar switch.

EAS00766

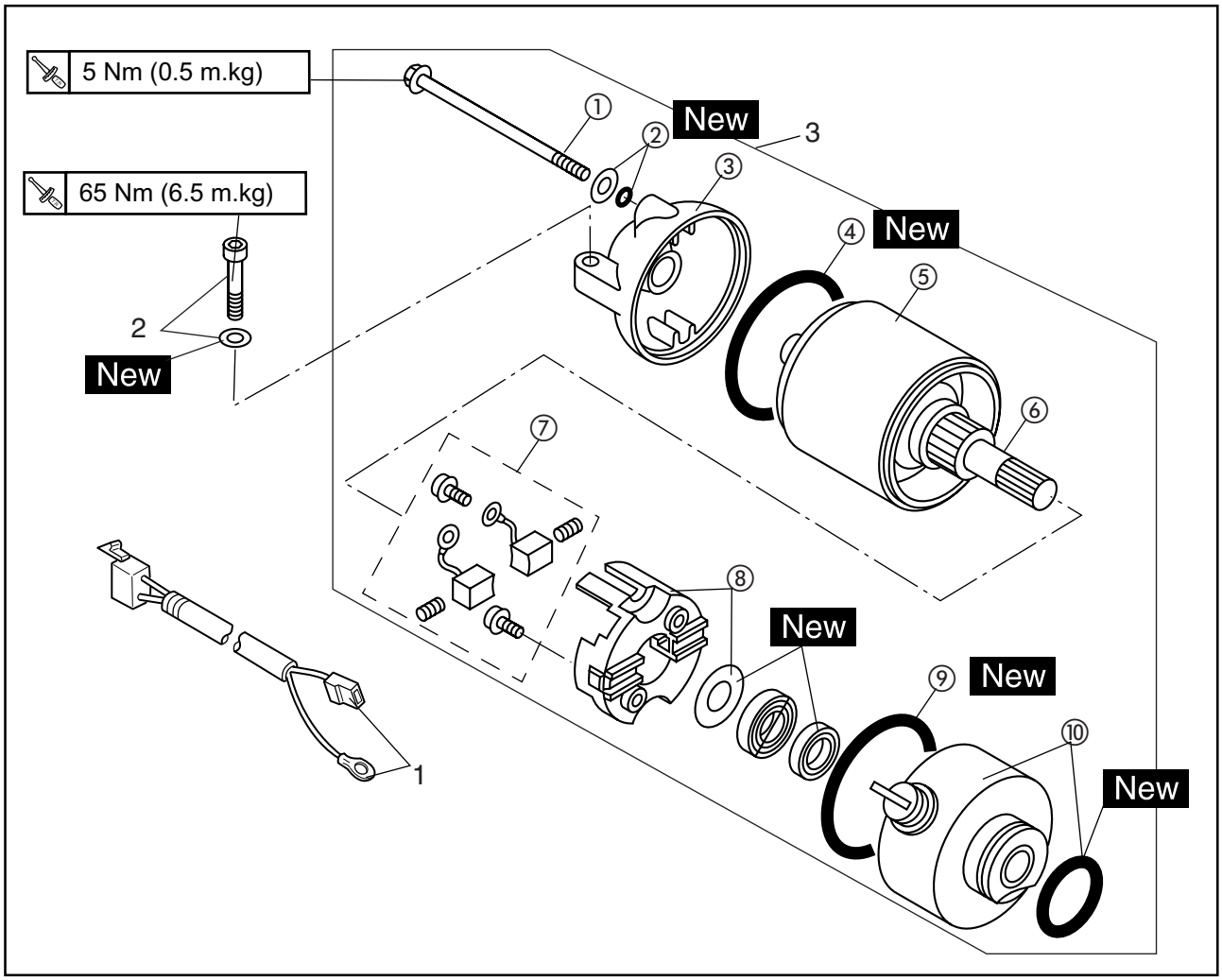
8. Wiring

- Check the entire starting system's wiring. Refer to "CIRCUIT DIAGRAM".
- Is the starting system's wiring properly connected and without defects?

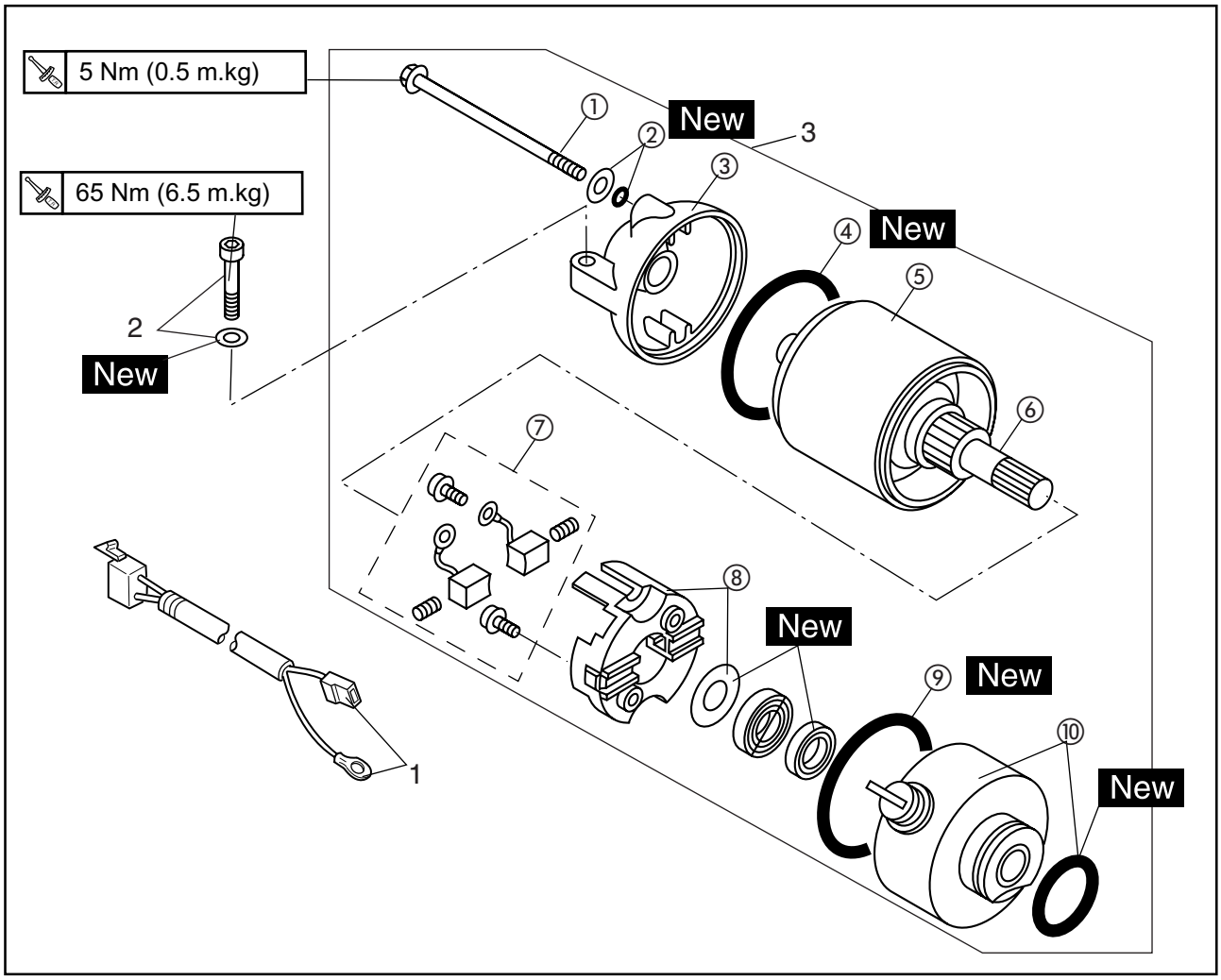
NO → Properly connect or repair the starting system's wiring.

YES → The starting system circuit is OK.

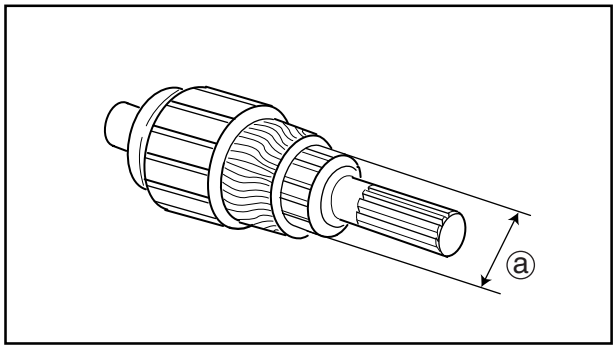
EASM0051
STARTER MOTOR

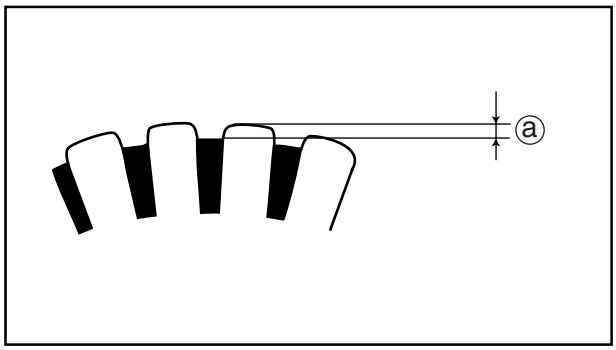


Order	Job/Part	Q'ty	Remarks
	Removing the starter motor		Remove/disassemble the parts in the order listed.
	Side covers		Refer to "SIDE COVERS AND SEAT" section in chapter 3.
	Box and seat		
1	Starter connector and coupler	1/1	
2	Starter motor fixing bolts/washer	2/2	
3	Starter motor	1	
	Disassembling the starter motor		
①	Starter motor mounting bolts	2	
②	Washers/o-rings	2/2	
③	Starter motor rear cover	1	
④	O-ring	1	
⑤	Stator assembly	1	
⑥	Armature assembly	1	



Order	Job/Part	Q'ty	Remarks
⑦	Brushes/Springs	2/2	
⑧	Brush holder/washer	1/1	
⑨	O-ring	1	
⑩	Starter motor front cover/O-ring	1/1	
			For installation/assembly, reverse the removal/disassembly procedure.





EAS00770
CHECKING THE STARTER MOTOR

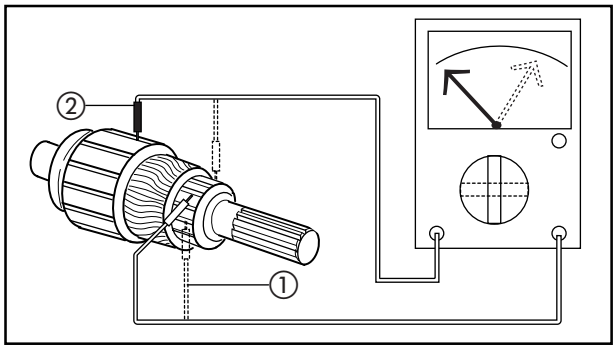
1. Check:
   • commutator
   Dirt → Clean with 600 grit sandpaper.
2. Measure:
   • commutator diameter ⓐ
   Out of specification → Replace the starter motor.

Commutator diameter
22 mm
<Limit>: 21 mm

3. Measure:
   • mica undercut ⓐ
   Out of specification → Scrape the mica to the proper measurement with a hacksaw blade which has been ground to fit the commutator.

Mica undercut
1.5 mm

NOTE:
The mica of the commutator must be undercut to ensure proper operation of the commutator.



4. Measure:
   • armature assembly resistances (commutator and insulation)
   Out of specification → Replace the starter motor.

▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼▼

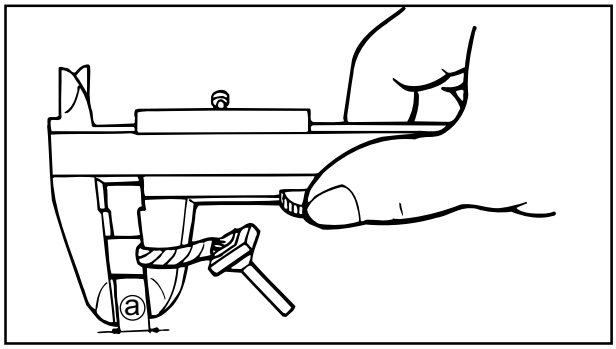
a. Measure the armature assembly resistances with the pocket tester.

Pocket tester
90890-03112

Armature coil
Commutator resistance ①
0.0306 ~ 0.0374 Ω at 20°C
Insulation resistance ②
Above 1 MΩ at 20°C

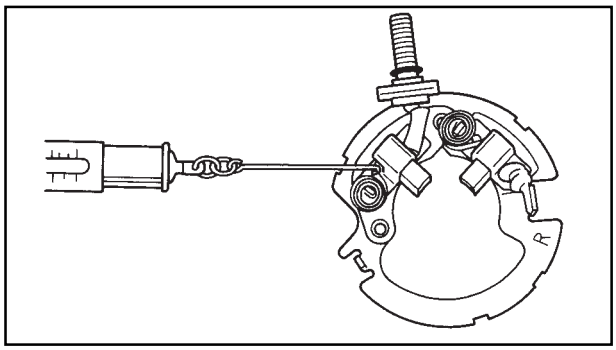
b. If any resistance is out of specification, replace the starter motor.

▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲▲



5. Measure:
   • brush length ⓐ.
   Out of specification → Replace the brushes as a set.

Brush length
10 mm
<Limit>: 3.5 mm



6. Measure:
   • brush spring force
   Out of specification → Replace the brush springs as a set.

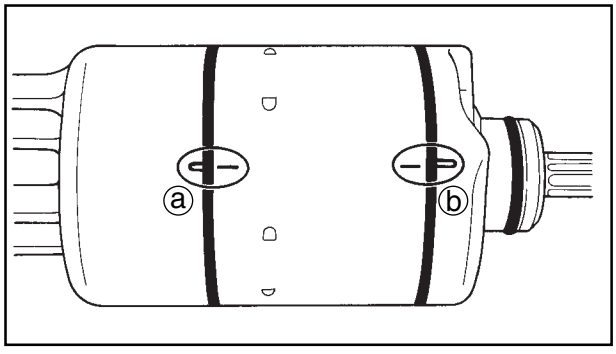
Brush spring force
5.6 ~ 8.3 N

7. Check:
   • gear teeth
   Damage/wear → Replace the gear.
8. Check:
   • bearing
   • oil seal New
   Damage/wear → Replace the defective part(-s).

EAS00772
ASSEMBLING THE STARTER MOTOR

1. Install:
   • Washer New
   • Brush
   • Brush seat

NOTE:
Align the tab on the brush seat with the slot in the starter motor rear cover.



2. Install:
   • Armature assembly
   • Stator assembly
   • starter motor front cover
   • starter motor rear cover

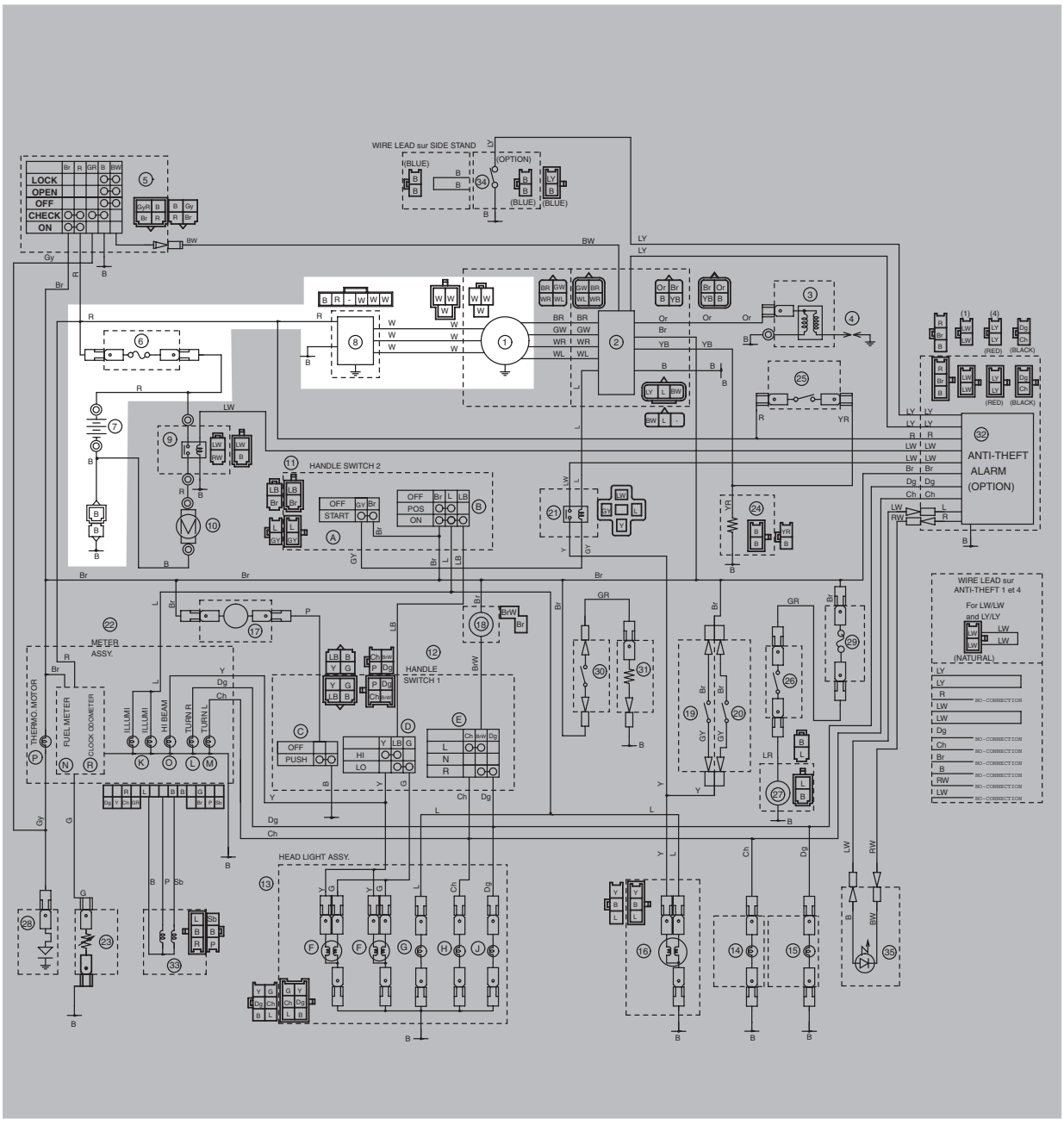
NOTE:
Align the match marks ⓐ on the starter motor yoke with the match marks ⓑ on the front and starter motor rear covers.

3. Install:
   - O-rings New
   - washers New
   - starter motor mounting bolts 5 Nm (0.5m•kg)
   - stater motor fixing bolts 65 Nm (6.5m•kg)

EAS00773

CHARGING SYSTEM

CIRCUIT DIAGRAM



① CDI magneto
⑥ Fuse (main)
⑦ Battery
⑧ Rectifier/regulator

EAS00774
TROUBLESHOOTING

THE BATTERY IS NOT BEING CHARGED.

Check:
1. main fuse
2. battery
3. charging voltage
4. stator coil resistance
5. wiring (of the entire charging system)

NOTE:
Before troubleshooting, remove the following part(s):
1) Side covers
2) Box and seat
Troubleshoot with the following special tool(s).

Engine tachometer
90890-03113
Pocket tester
90890-03112

EAS00738
1. Main fuse
- Check the main fuse for continuity.
- Refer to "CHECKING THE FUSES" in chapter 3.
- Is the main fuse OK?

YES → NO → Replace the fuse.

EAS00739
2. Battery
- Check the condition of the battery. Refer to "CHECKING THE BATTERY" in chapter 3.

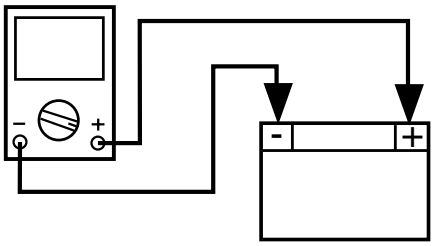
Minimum open-circuit voltage
12.8 V or more at 20°C

- Is the battery OK?

YES → NO →
- Clean the battery terminals.
- Recharge or replace the battery.

EAS00775
3. Charging voltage
- Connect the engine tachometer to the spark plug lead of the cylinder.
- Connect the pocket tester (DC V 20) to the battery as shown.

Positive tester probe → positive battery terminal
Negative tester probe → negative battery terminal



- Start the engine and let it run at approximately 5,000 r/min.
- Measure the charging voltage.

Charging voltage
measured voltage - terminal
14 V at 5,000 r/min

NOTE:
Make sure the battery is fully charged.

- Is the charging voltage within specification?

NO

YES

The charging circuit is OK.

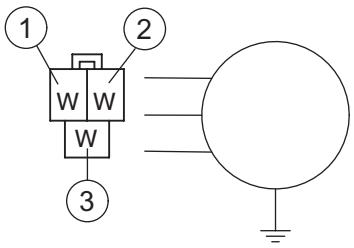
EAS00776

4. Stator coil resistance

- Disconnect the stator coil coupler from the wire harness.
- Connect the pocket tester (Ω x 1) to the stator coils assembly coupler as shown.

Positive tester probe → white ①
Negative tester probe → white ②

Positive tester probe → white ①
Negative tester probe → white ③



- Measure the stator coil resistances.

Stator coil resistance
0.6 ~ 0.9 Ω at 20°C

- Is the stator coil OK?

YES

NO

Replace the stator coil assembly.

EAS00779

5. Wiring connections

- Check the wiring connections of the entire charging system.
  Refer to "CIRCUIT DIAGRAM".
- Is the charging system's wiring properly connected and without defects?

NO

YES

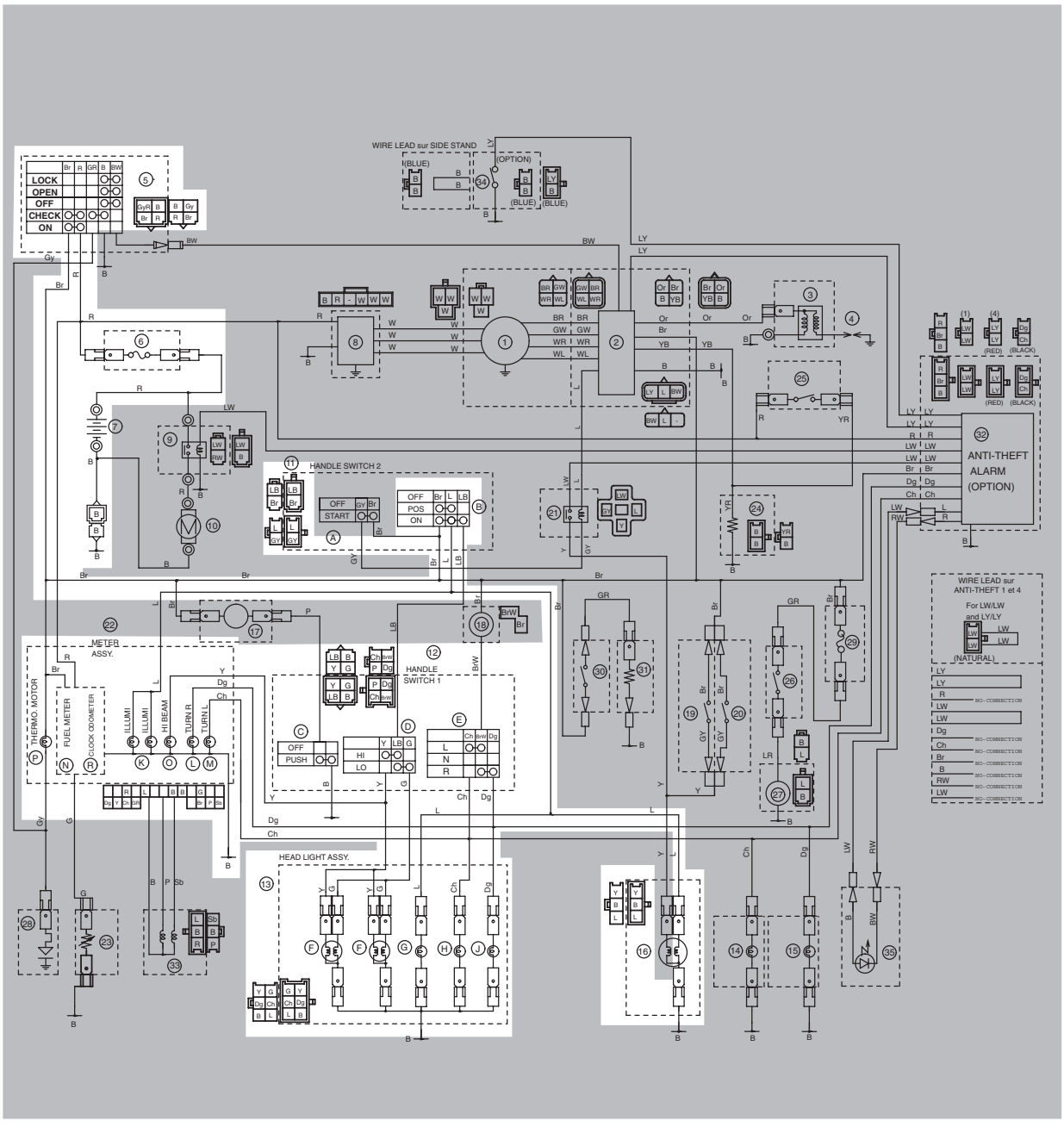
Properly connect or repair the charging system's wiring.

Replace the rectifier/ regulator.

EAS00780

LIGHTING SYSTEM

CIRCUIT DIAGRAM



⑤ Main switch
⑥ Fuse (main)
⑦ Battery
⑪ Ⓑ Light switch
⑫ Ⓔ Flasher switch
⑬ Ⓕ Headlight
⑯ Tail/stop light
㉒ Ⓚ Meter light

EAS00781
TROUBLESHOOTING

ANY OF THE FOLLOWING FAIL TO LIGHT: HEADLIGHT, HIGH BEAM INDICATOR LIGHT, TAILLIGHT, AUXILIARY LIGHT OR INSTRUMENT LIGHT .

Check:
1. main fuse
2. battery
3. main switch
4. lighting switch
5. dimmer switch
6. wiring (of the entire lighting system)

NOTE:
Before troubleshooting, remove the following part(s):
1)Side covers
2)Box and seat
3)Front cover and handlebar covers
Troubleshoot with the following special tool(s).

Pocket tester
90890-03112

EAS00738

1. Main fuse

- Check the main fuse for continuity.
- Refer to “CHECKING THE FUSES” in chapter 3.
- Is the main fuse OK?

YES → NO: Replace the fuse.

EAS00739

2. Battery

- Check the condition of the battery. Refer to “CHECKING THE BATTERY” in chapter 3.

Minimum open-circuit voltage
12.8 V or more at 20°C

- Is the battery OK?

YES → NO:
- Clean the battery terminals.
- Recharge or replace the battery.

EAS00749

3. Main switch

- Check the main switch for continuity. Refer to “CHECKING THE SWITCHES”.
- Is the main switch OK?

YES → NO: Replace the main switch.

EAS00783

4. Lighting switch

- Check the lighting switch for continuity. Refer to “CHECKING THE SWITCHES”.
- Is the lighting switch OK?

YES → NO: The lighting switch is faulty. Replace the right handlebar switch.

EAS00784

5. Hi/Lo beam switch

- Check the Hi/Lo beam switch for continuity. Refer to “CHECKING THE SWITCHES”.
- Is the Hi/Lo beam switch OK?

YES

NO

The Hi/Lo beam switch is faulty. Replace the left handlebar switch.

EAS00787

6. Wiring (of the entire lighting system)

- Check the entire lighting system’s wiring. Refer to “CIRCUIT DIAGRAM”.
- Is the lighting system’s wiring properly connected and without defects?

NO

Properly connect or repair the lighting system’s wiring.

YES

Check the condition of each of the lighting system’s circuits. Refer to “CHECKING THE LIGHTING SYSTEM”.

EAS00788

CHECKING THE LIGHTING SYSTEM

1. The headlight and the high beam indicator light fail to come on.

1. Headlight bulb and socket

- Check the headlight bulb and socket for continuity.
- Are the headlight bulb and socket OK?

YES

NO

Replace the headlight bulb, socket or both.

2. Voltage

- Connect the pocket tester (DC V 20) to the headlight and high beam indicator light couplers as shown.

A When the dimmer switch is set to “”

B When the dimmer switch is set to “”

- Headlight coupler (wire harness side)

Headlight

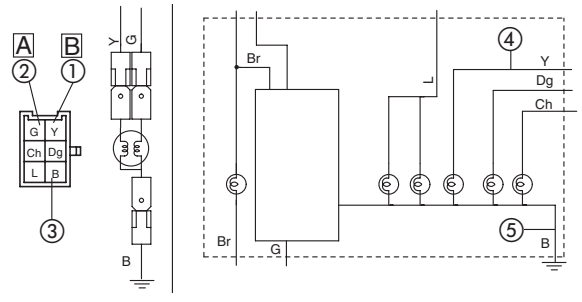
Positive tester probe → yellow ① or green ②

Negative tester probe → black ③

High beam indicator light

Positive tester probe → yellow ④

Negative tester probe → black ⑤



- Meter light coupler (wire harness side)
- Set the main switch to “ON”.
- Set the light switch to “ ”.
- Set the dimmer switch to “ ” or “ ”.
- Measure the voltage (12 V) of green on the headlight coupler (wire harness side).
- Is the voltage within specification?

NO

The wiring circuit from the main switch to the headlight coupler is faulty and must be repaired.

YES

This circuit is OK.

EAS00789

2. The meter light fails to come on.

1. Meter light bulb and socket

- Check the meter light bulb and socket for continuity.
- Are the meter light bulb and socket OK?

YES

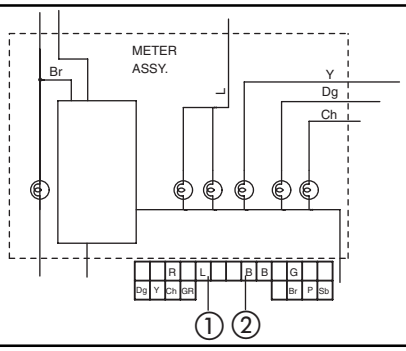
NO

Replace the meter light bulb, socket or both.

2. Voltage

- Connect the pocket tester (20 V) to the meter light coupler (wire harness side) as shown.

Positive tester probe → blue ①
Negative tester probe → black ②



- Set the main switch to “ON”.
- Set the light switch to “ ” or “ ”.
- Measure the voltage (12 V) of blue ① on the meter light coupler (wire harness side).
- Is the voltage within specification?

NO

The wiring circuit from the main switch to the meter light coupler is faulty and must be repaired.

YES

This circuit is OK.

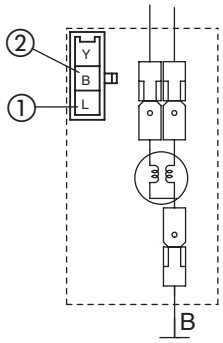
EAS00790
3. The tail/brake light fails to come on.

1. Tail/brake light bulb and socket
• Check the tail/brake light bulb and socket for continuity. • Are the tail/brake light bulb and socket OK?

YES

NO

Replace the tail/brake light bulb, socket or both.

2. Voltage
• Connect the pocket tester (DC V 20) to the tail/brake light coupler (wire harness side) as shown.
Positive tester probe → blue ① **Negative tester probe → black ②**

• Set the main switch to “ON”. • Set the light switch to “≡D” or “≡D”. • Measure the voltage (12 V) of blue ① on the tail/brake light coupler (tail/brake light side). • Is the voltage within specification?

NO

YES

The wiring circuit from the main switch to the tail/brake light coupler is faulty and must be repaired.

This circuit is OK.

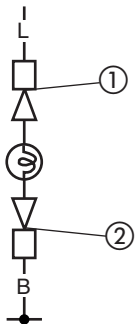
EAS00791
4. The front postion light fails to come on.

1. Auxiliary light bulb and socket
• Check the auxiliary light bulb and socket for continuity. Refer to "CHECKING THE BULBS AND BULB SOCKET". • Are the auxiliary light bulb and socket OK?

YES

NO

Replace the auxiliary light bulb, socket or both.

2. Voltage
• Connect the pocket tester (DC V 20) to the auxiliary light coupler (wire harness side) as shown.
Positive tester probe → blue ① **Negative tester probe → black ②**

• Set the main switch to “ON”. • Set the light switch to “≡D” or “☼”. • Measure the voltage (12 V) of blue ① on the auxiliary light coupler (wire harness side). • Is the voltage within specification?

NO

YES

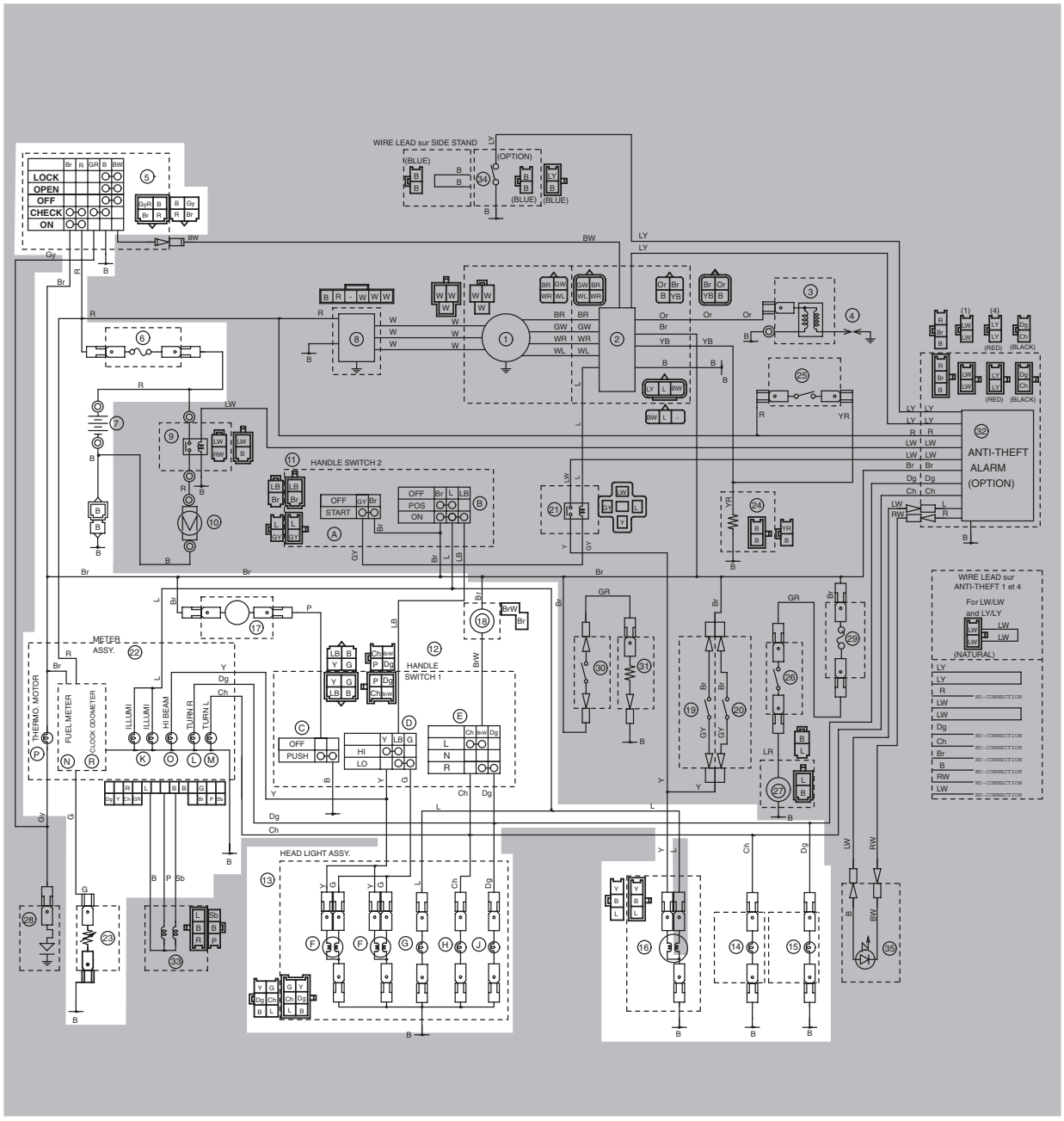
The wiring circuit from the main switch to the auxiliary light conectors is faulty and must be repaired.

This circuit is OK.

EAS00793

SIGNALING SYSTEM

CIRCUIT DIAGRAM



⑤ Main switch
⑥ Fuse (main)
⑦ Battery
⑫ Ⓒ Horn switch
Ⓔ Turn signal switch
⑬ Ⓗ Left front flasher
Ⓙ Right front flasher
⑭ Left rear flasher
⑮ Right rear flasher
⑯ Tail/stop light
⑰ Horn
⑱ Flasher relay
㉒ Ⓟ Coolant thermo indicator light
Ⓝ Fuel sender indicator
Ⓡ Clock and odometer
Ⓛ Flasher light indicator
Ⓜ Flasher light indicator
㉓ Sender

EAS00794
TROUBLESHOOTING

ANY OF THE FOLLOWING FAIL TO LIGHT: FLASHER LIGHT, BRAKE LIGHT OR AN INDICATOR LIGHT.
THE HORN FAILS TO SOUND.

Check:
1. main fuse
2. battery
3. main switch
4. wiring (of the entire signalling system)

NOTE:
- Before troubleshooting, remove the following part(s):

1) Side covers
2) Box and seat
3) Battery cover

- Troubleshoot with the following special tool(s).

Pocket tester
90890-03112

EAS00738

1. Main fuse

- Check the main fuse for continuity.
- Refer to "CHECKING THE FUSES" in chapter 3.
- Is the main fuse OK?

YES

NO → Replace the fuse.

EAS00739

2. Battery

- Check the condition of the battery. Refer to "CHECKING THE BATTERY" in chapter 3.

Minimum open-circuit voltage
12.8 V or more at 20°C

- Is the battery OK?

YES

NO →
- Clean the battery terminals.
- Recharge or replace the battery.

EAS00749

3. Main switch

- Check the main switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the main switch OK?

YES

NO → Replace the main switch.

EAS00795

4. Wiring

- Check the entire signal system's wiring. Refer to "CIRCUIT DIAGRAM".
- Is the signalling system's wiring properly connected and without defects?

NO → Properly connect or repair the signalling system's wiring.

YES → Check the condition of each of the signalling system's circuits. Refer to "CHECKING THE SIGNALLING SYSTEM".

EAS00796
CHECKING THE SIGNALING SYSTEM

1. The horn fails to sound.

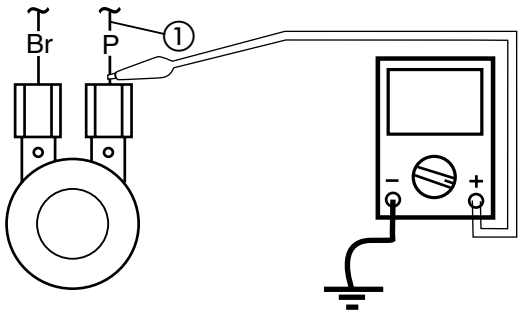
1. Horn switch
- Check the horn switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the horn switch OK?

YES ⇩ NO ⇩

Replace the left handlebar switch.

2. Voltage
- Connect the pocket tester (DC V 20) to the horn connector at the horn terminal as shown.

Positive tester probe → pink ①
Negative tester probe → ground



- Set the main switch to "ON".
- Push the horn switch.
- Measure the voltage (12 V) of brown at the horn terminal.
- Is the voltage within specification?

YES ⇩ NO ⇩

The wiring circuit from the main switch to the horn connector is faulty and must be repaired.

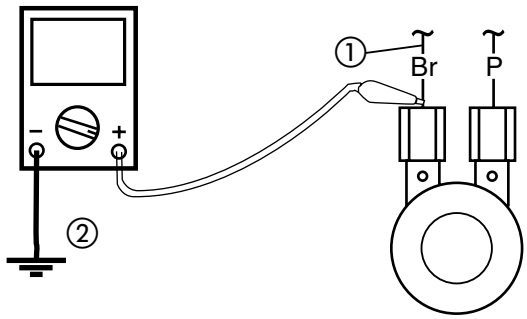
3. Horn
- Disconnect the pink connector at the horn terminal.
- Connect a jumper lead to the horn terminal and ground the jumper lead.
- Set the main switch to "ON".
- Does the horn sound?

NO ⇩ YES ⇩

The horn is OK.

4. Voltage
- Connect the pocket tester (DC V 20) to the horn connector at the black terminal as shown.

Positive tester probe → brown ①
Negative tester probe → ground ②



- Set the main switch to "ON".
- Measure the voltage (12 V) of brown ① at the horn terminal.
- Is the voltage within specification?

NO ⇩ YES ⇩

Replace the horn.

Repair or replace the horn.

EAS00798
2. The tail/brake light fails to come on.

1. Tail/brake light bulb and socket
- Check the tail/brake light bulb and socket for continuity.
- Are the tail/brake light bulb and socket OK?

YES → 2. Brake light switches

NO → Replace the tail/brake light bulb, socket or both.

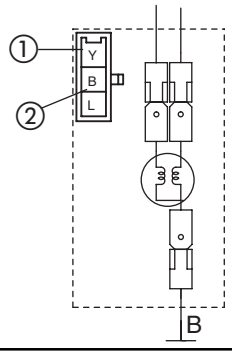
2. Brake light switches
- Check the brake light switches for continuity. Refer to "CHECKING THE SWITCHES".
- Is the brake light switch OK?

YES → 3. Voltage

NO → Replace the brake light switch.

3. Voltage
- Connect the pocket tester (DC V 20) to the tail/brake light coupler (wire harness side) as shown.

Positive tester probe → yellow ①
Negative tester probe → black ②



- Set the main switch to "ON".
- Pull in the brake levers.
- Measure the voltage (12 V) of yellow ① on the tail/brake light coupler (wire harness side).
- Is the voltage within specification?

NO → The wiring circuit from the main switch to the tail/brake light coupler is faulty and must be repaired.

YES → This circuit is OK.

EAS00799
3. The turn signal light, turn signal indicator light or both fail to blink.

1. Turn signal indicator light bulb and socket
- Check the turn signal light bulb and socket for continuity.
- Are the turn signal light bulb and socket OK?

YES → 2. Turn signal switch

NO → Replace the turn signal light bulb, socket or both.

2. Turn signal switch
- Check the turn signal switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the turn signal switch OK?

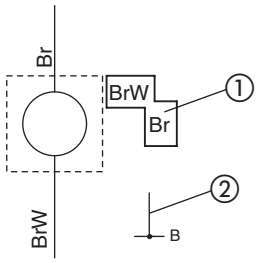
YES → Check the turn signal relay.

NO → Replace the left handlebar switch.

3. Voltage

- Connect the pocket tester (DC V 20) to the flasher relay coupler (wire harness side) as shown.

Positive tester probe → brown ①
Negative tester probe → ground ②



- Set the main switch to "ON".
- Measure the voltage (12 V) on brown ① at the turn signal relay coupler (wire harness side).
- Is the voltage within specification?

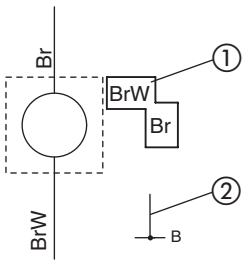
YES → The wiring circuit from the main switch to the turn signal relay coupler is faulty and must be repaired.

NO

4. Voltage

- Connect the pocket tester (DC V 20) to the flasher relay coupler (wire harness side) as shown.

Positive tester probe → brown/white ①
Negative tester probe → ground ②



- Set the main switch to "ON".
- Set the turn signal switch to "⇦" or "⇨".
- Measure the voltage (12 V) on brown/white ① at the turn signal relay coupler (wire harness side).
- Is the voltage within specification?

YES

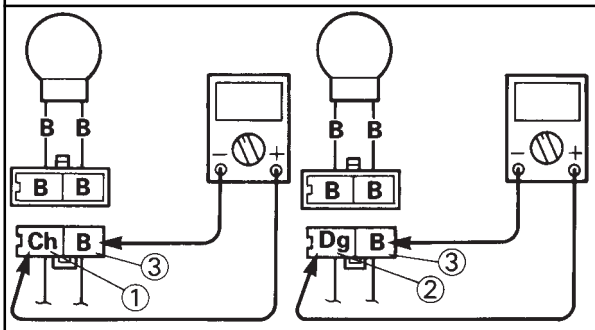
NO → The turn signal relay is faulty and must be replaced.

5. Voltage

- Connect the pocket tester (DC V 20) to the turn signal light connector as shown.

A Turn signal light
B Turn signal indicator light

Left turn signal light
Positive tester probe → chocolate ①
Negative tester probe → ground ③
Right turn signal light
Positive tester probe → dark green ②
Negative tester probe → ground ③



- Set the main switch to "ON".
- Set the turn signal switch to "⇦" or "⇨".
- Measure the voltage (12 V) of the chocolate ① or dark green ② at the turn signal light connector (wire harness side).
- Is the voltage within specification?

NO → The wiring circuit from the turn signal switch to the turn signal light connector is faulty and must be repaired.

YES → This circuit is OK.

EASM0052

4. The Coolant temperature warning light fails to come on.

1. Coolant temperature warning light bulb and socket

- Check the coolant temperature warning light bulb and socket for continuity.
- Are coolant temperature warning light bulb and socket OK?

YES

NO

Replace the coolant temperature warning light bulb, socket or both.

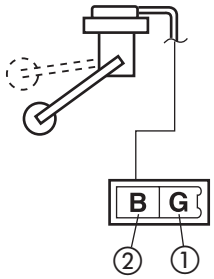
EAS00804

5. The fuel level gauge fails to operate.

1. Fuel sender

- Remove the fuel sender from the fuel tank.
- Connect the pocket tester to the fuel sender coupler (wire harness side) as shown.

Positive tester probe → green ①
Negative tester probe → black ②



- Measure the fuel sender resistances.

Fuel sender resistance (up position)
(Ω x 1)
1.5 ~ 7.5 Ω at 20°C
Fuel sender resistance (down position)
(Ω x 10)
90 ~ 100 Ω at 20°C

- Is the fuel sender OK?

YES

NO

Replace the fuel sender.

2. Voltage

- Connect the pocket tester (DC V 20) to the meter light coupler (wire harness side) .

Positive tester probe → brown
Negative tester probe → black

- Set the main switch to "ON".
- Measure the voltage (12 V) of brown on the meter light coupler (wire harness side).
- Is the voltage within specification?

YES ⇩

NO ⇩

Check the wiring connections of the entire signaling system.

3. Fuel level gauge

- Set the main switch to "ON".
- Move the float up or down.
- Check that the fuel level gauge needle moves to up or down.

NOTE:
Before reading the fuel level gauge, leave the float in one position (either up or down) for at least three minutes.

- Does the fuel level gauge needle move appropriately?

YES ⇩

NO ⇩

Replace the speedometer unit.

4. Wiring

- Check the entire signal system's wiring. Refer to "CIRCUIT DIAGRAM".
- Is the signalling system's wiring properly connected and without defects?

NO ⇩

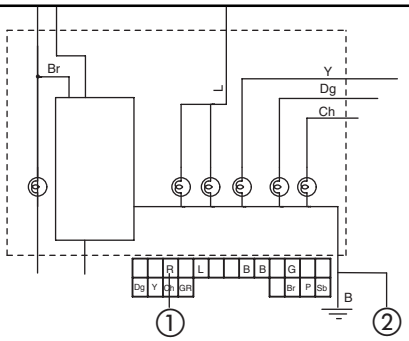
Properly connect or repair the signalling system's wiring.

YES ⇩

Check the condition of each of the signalling system's circuits. Refer to "CHECKING THE SIGNALLING SYSTEM".

EAS00805

6. The clock/odometer fails to come on.

1. Voltage
• Connect the pocket tester (DC V 20) to the clock/odometer coupler (wire harness side) as shown.
Positive tester probe → red ① **Negative tester probe → ground ②**

• Set the main switch to “ON”. • Measure the voltage (12 V). • Is the voltage within specification?

YES → 2. Clock

NO → The wiring circuit from the main switch to the clock coupler is faulty and must be repaired.

2. Clock
• Check that the clock is operating properly. • When setting the clock after its power source has been disconnected (e.g., when the battery is removed), first set the clock to 1:00 AM and then to the correct time. • Is the clock operating properly?

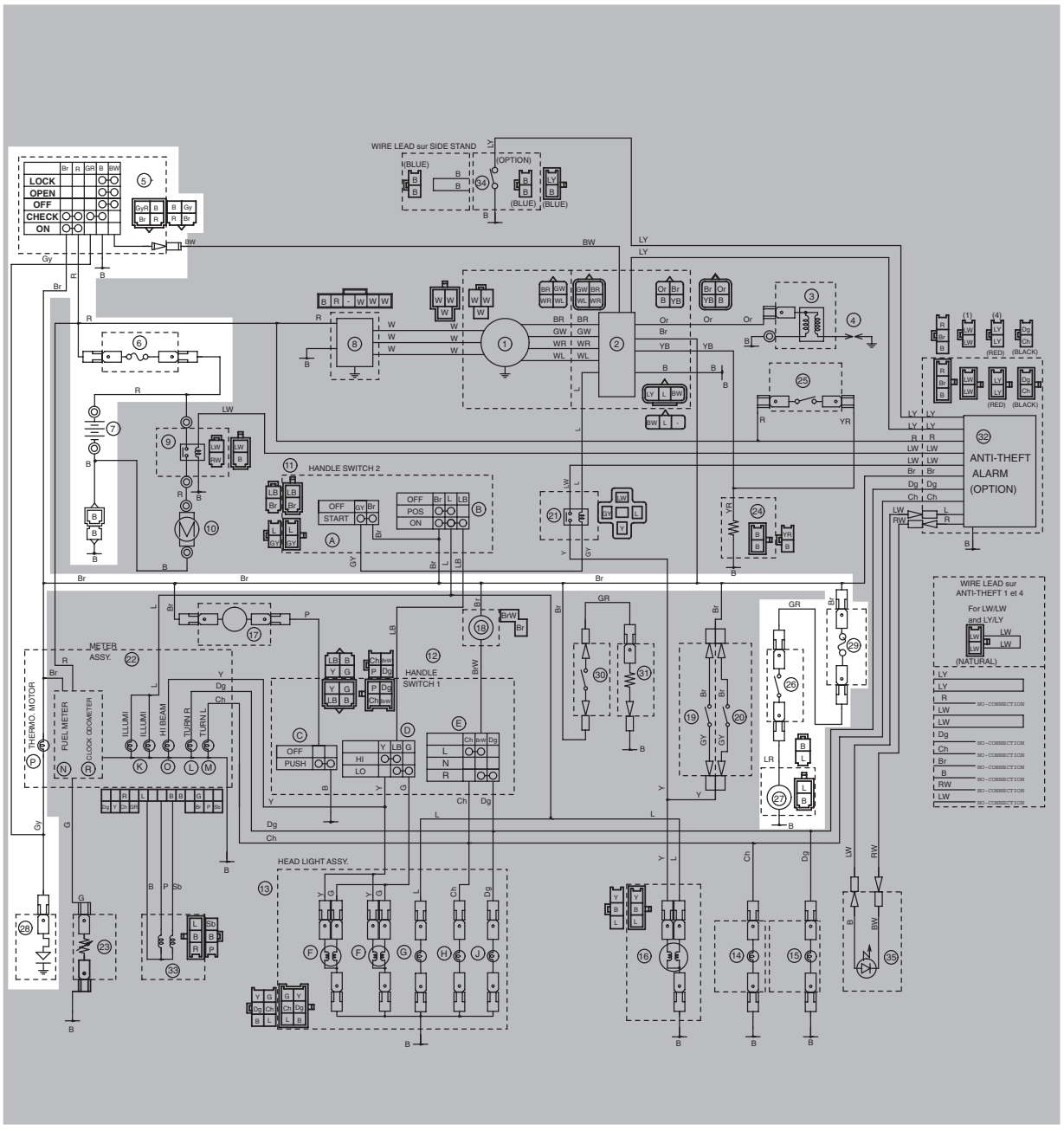
NO → Replace the clock/odometer.

YES → This circuit is OK.

EAS00807

COOLING SYSTEM

CIRCUIT DIAGRAM



⑤ Main switch
⑥ Fuse (main)
⑦ Battery
㉖ Thermo fan switch
㉗ Fan
㉘ Coolant thermo switch
㉙ Fan Fuse

EAS00808
TROUBLESHOOTING

• The radiator fan motor fails to turn. **• The water temperature warning light fails to light up when the engine is warm.**

Check:
1. main and radiator fan motor fuses
2. battery
3. main switch
4. radiator fan motor
5. thermo switch
6. wiring connections
   (the entire cooling system)

NOTE:
- Before troubleshooting, remove the following part(-s):

1) Side covers
2) Box and seat
3) Battery cover
4) Front cover

- Troubleshoot with the following special tool (-s).

	Pocket tester **90890-03112**

EASM0053
1. The radiator fan motor fails to turn.

1. Main and radiator fan motor fuses
• Check the fuses for continuity. Refer to “CHECKING THE FUSES” in chapter 3. • Are the fuses OK?

YES

NO → Replace the fuses.

EAS00739

2. Battery
• Check the condition of the battery. Refer to “CHECKING THE BATTERY” in chapter 3.
Minimum open-circuit voltage **12.8 V or more at 20°C**
• Is the battery OK?

YES

NO →
- Clean the battery terminals.
- Recharge or replace the battery.

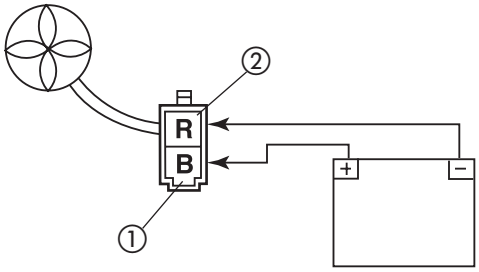
EAS00749

3. Main switch
• Check the main switch for continuity. Refer to “CHECKING THE SWITCHES”. • Is the main switch OK?

YES

NO → Replace the main switch.

EAS00809

4. Radiator fan motor
• Disconnect the radiator fan motor coupler from the wire harness. • Connect the battery (12 V) as shown.
Positive battery lead → black ① **Negative battery lead → blue ②**


• Does the radiator fan motor turn?

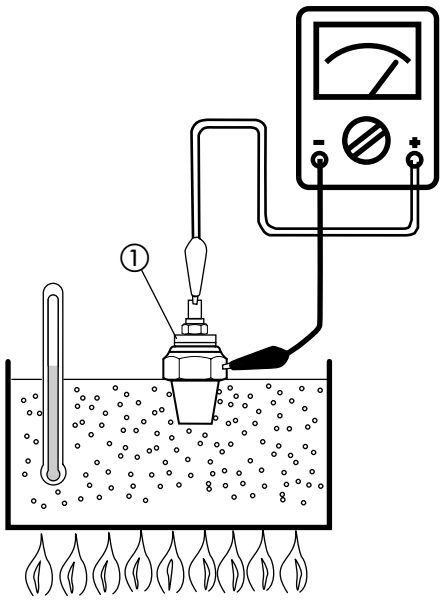
YES ⇩ NO ⇩

The radiator fan motor is faulty and must be replaced.

EAS00811

6. Thermo switch

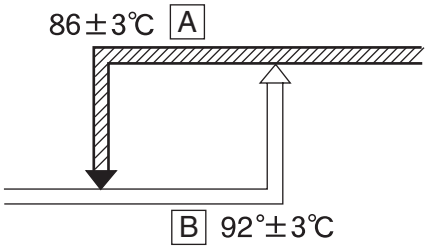
• Remove the thermo switch from the radiator.
• Connect the pocket tester (Ω x 1) to the thermo switch ① as shown.
• Immerse the thermo switch in a container filled with coolant.
• Place a thermometer in the coolant.
• Slowly heat the coolant, then let it cool down to the specified temperature.
• Check the thermo switch for continuity at the temperatures indicated below.



⚠ WARNING

- **Handle the thermo switch with special care.**
- **Never subject the thermo switch to strong shocks. If the thermo switch is dropped, replace it.**

A Thermo switch circuit "ON"
B Thermo switch circuit "OFF"



• Does the thermo switch operate properly as described above?

YES ⇩ NO ⇩

Replace the thermo switch.

EAS00813

7. Wiring

• Check the entire cooling system's wiring. Refer to "CIRCUIT DIAGRAM".
• Is the cooling system's wiring properly connected and without defects?

NO ⇩ YES ⇩

Properly connect or repair the cooling system's wiring.

This circuit is OK.

EASM0053

2. The water temperature warning light fails to light up when the engine is warm.

1. Main fuse

• Check the fuse for continuity. Refer to "CHECKING THE FUSES" in chapter 3.
• is the fuse OK?

YES ⇩ NO ⇩

Replace the fuse.

EAS00739

2. Battery

- Check the condition of the battery. Refer to "CHECKING THE BATTERY" in chapter 3.

Minimum open-circuit voltage
12.8 V or more at 20°C

- Is the battery OK?

YES

NO

- Clean the battery terminals.
- Recharge or replace the battery.

EAS00749

3. Main switch

- Check the main switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the main switch OK?

YES

NO

Replace the main switch.

EAS00812

4. Temperature sender

- Remove the temperature sender from the radiator.
  Connect the pocket tester (Ω x 10) to the temperature sender.
- Immerse the temperature sender in a container filled with coolant.

NOTE:
Make sure the thermo switch terminals do not get wet.

- Place a thermometer in the coolant.
- Slowly heat the coolant, and then let it cool to the specified temperature indicated in the table.
- Check the thermo switch for continuity at the temperatures indicated in the table.

Temperature sender resistance
80°C: 47.5 ~ 56.8 Ω
100°C: 26.2 ~ 29.3 Ω

⚠ WARNING

- **Handle the temperature sender with special care.**
- **Never subject the temperature sender to strong shocks. If the temperature sender is dropped, replace it.**

A Thermo switch circuit is open and the temperature warning light is "OFF"
B Thermo switch circuit is closed and the temperature warning light is "ON"

- Does the temperature sender operate properly?

YES

NO

Replace the temperature sender.

EAS00813

5. Wiring (of the entire cooling system).

- Check the entire cooling system's wiring. Refer to "CIRCUIT DIAGRAM".
- Is the cooling system's wiring properly connected and without defects?

NO

Properly connect or repair the cooling system's wiring.

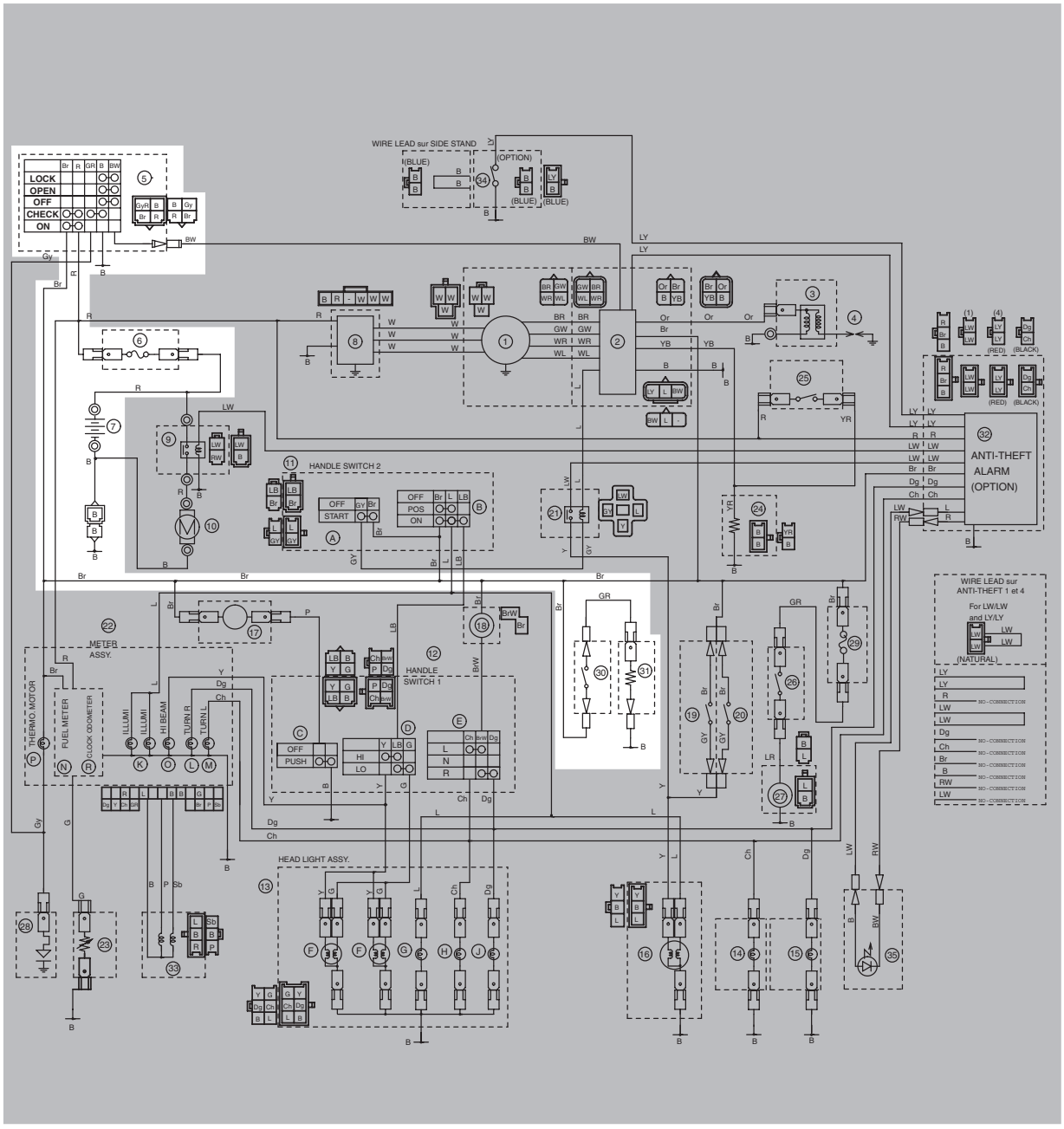
YES

This circuit is OK.

EAS00820

CARBURETOR HEATING SYSTEM

CIRCUIT DIAGRAM



⑤ Main switch
⑥ Fuse (main)
⑦ Battery
㉚ Carburetor heater switch
㉛ Carburetor heater

EAS00821
TROUBLESHOOTING

The carburetor heating system fails to operate.

Check:
1. Main fuse
2. Battery
3. Main switch
4. Thermo switch
5. Carburetor heater
6. Wiring (of the entire carburetor heating system)

NOTE:
- Before troubleshooting, remove the following part(s):

1) Side covers
2) Box and seat
3) Battery cover

- Troubleshoot with the following special tool(s).

Pocket tester
90890-03112

EAS00738

1. Main fuse

- Check the main fuse for continuity.
- Refer to "CHECKING THE FUSES" in chapter 3.
- Is the main fuse OK?

YES

NO

Replace the fuse.

EAS00739

2. Battery

- Check the condition of the battery. Refer to "CHECKING THE BATTERY" in chapter 3.

Minimum open-circuit voltage
12.8 V or more at 20°C

- Is the battery OK?

YES

NO

- Clean the battery terminals.
- Recharge or replace the battery.

EAS00749

3. Main switch

- Check the main switch for continuity. Refer to "CHECKING THE SWITCHES".
- Is the main switch OK?

YES

NO

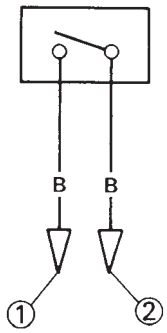
Replace the main switch.

EAS00823

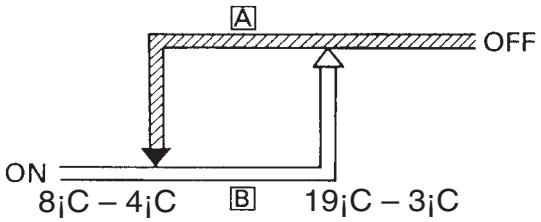
4. Thermo switch

- Disconnect the thermo switch from the wire harness.
- Connect the pocket tester (Ω x 1) to the thermo switch lead.

Positive tester probe → black ①
Negative tester probe → black ②



- Check the thermo switch for continuity at the temperatures indicated below.



A COOL DOWN
B HEAT UP

- Does the thermo switch operated properly ?

YES → Replace the thermo switch.

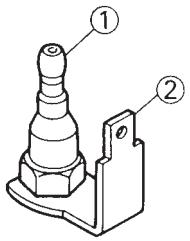
NO → Replace the thermo switch.

EAS00824

5. Carburetor heater

- Remove the carburetor heating element from the carburetor.
- Connect the pocket tester (Ω x 1) to the carburetor heating element.

Positive tester probe → heating element ①
Negative tester probe → heating element body ②



- Measure the carburetor heater resistance.

Carburetor heating element resistance:
6 ~ 12 Ω at 20°C

- Is the carburetor heating element OK?

YES → This circuit is OK.

NO → Replace the carburetor heating element.

EAS00826

6. Wiring (of the entire carburetor heating system)

- Check the entire carburetor heating system's wiring
  Refer to "CIRCUIT DIAGRAM"
- Is the carburetor heating system properly connected and without defects?

NO → Properly connect or repair the carburetor heating system's wiring.

YES → This circuit is OK.

?

TRBL SHTG

9

CHAPTER 9.
TROUBLESHOOTING

STARTING FAILURE/ HARD STARTING 9-1
ENGINE 9-1
FUEL SYSTEM 9-1
ELECTRICAL SYSTEMS 9-2

INCORRECT ENGINE IDLING SPEED 9-2
ENGINE 9-2
FUEL SYSTEM 9-2
ELECTRICAL SYSTEMS 9-2

POOR MEDIUM-AND-HIGH-SPEED PERFORMANCE 9-2
ENGINE 9-2
FUEL SYSTEM 9-2

FAULTY CLUTCH 9-3
ENGINE OPERATES BUT SCOOTER WILL NOT MOVE 9-3
CLUTCH SLIPS 9-3
POOR STARTING PERFORMANCE 9-3
POOR SPEED PERFORMANCE 9-3

OVER HEATING 9-3
ENGINE 9-3
COOLING SYSTEM 9-3
FUEL SYSTEM 9-3
CHASSIS 9-3
ELECTRICAL SYSTEMS 9-3

OVERCOOLING 9-4
COOLING SYSTEM 9-4

POOR BRAKING 9-4

FAULTY FRONT FORK LEGS 9-4
LEAKING OIL 9-4
MALFUNCTION 9-4

UNSTABLE HANDLING 9-5

FAULTY LIGHTING OR SIGNALING SYSTEM 9-5
HEADLIGHT DOES NOT LIGHT 9-5
HEADLIGHT BULB BURNT OUT 9-5
TAIL/BRAKE LIGHT DOES NOT LIGHT 9-5
TAIL/BRAKE LIGHT BULB BURNT OUT 9-5
TURN SIGNAL DOES NOT LIGHT 9-5
TURN SIGNAL BLINKS SLOWLY 9-5
TURN SIGNAL REMAINS LIT 9-6
TURN SIGNAL BLINKS QUICKLY 9-6
HORN DOES NOT SOUND 9-6

EAS00845

TROUBLESHOOTING

NOTE:

The following guide for troubleshooting does not cover all the possible causes of trouble. It should be helpful, however, as a guide to basic troubleshooting. Refer to the relative procedure in this manual for checks, adjustments, and replacement of parts.

STARTING FAILURE/HARD STARTING

ENGINE

Cylinder and cylinder head

- Loose spark plug
- Loose cylinder head or cylinder
- Damaged cylinder head gasket
- Damaged cylinder base gasket
- Worn or damaged cylinder
- Incorrect valve clearance
- Improperly sealed valve
- Incorrect valve-to-valve-seat contact
- Incorrect valve timing
- Faulty valve spring
- Seized valve

Piston and piston ring(s)

- Improperly installed piston ring
- Damaged, worn or fatigued piston ring
- Seized piston ring
- Seized or damaged piston

Air filter

- Improperly installed air filter
- Clogged air filter element

Crankcase and crankshaft

- Improperly assembled crankcase
- Seized crankshaft

FUEL SYSTEM

Fuel tank

- Empty fuel tank
- Clogged fuel tank cap breather hole
- Deteriorated or contaminated fuel
- Clogged or damaged fuel hose

Carburetor

- Deteriorated or contaminated fuel
- Clogged pilot jet
- Clogged pilot air passage
- Sucked-in air
- Damaged float
- Worn needle valve
- Improperly installed needle valve seat
- Incorrect fuel level
- Improperly adjusted pilot air screw
- Improperly installed pilot jet
- Clogged starter jet
- Clogged emulsion tube

Autochoke unit

- Faulty starter plunger
- Faulty ignitor unit
- Faulty thermo switch

ELECTRICAL SYSTEMS

Battery
- Improperly charged battery
- Faulty battery

Fuse(s)
- Blown, damaged or incorrect fuse
- Improperly installed fuse

Spark plug
- Incorrect spark plug gap
- Incorrect spark plug heat range
- Fouled spark plug
- Worn or damaged electrode
- Worn or damaged insulator
- Faulty spark plug cap

Ignition coil
- Broken or shorted primary or secondary coils
- Faulty spark plug lead
- Cracked or broken ignition coil body

Ignition system
- Faulty ignition unit
- Faulty pickup coil
- Broken generator rotor woodruff key/slipped timing

Switches and wiring
- Faulty main switch
- Broken or shorted wiring
- Faulty front, rear or both brake switches
- Faulty start switch
- Improperly grounded circuit
- Loose connections

Starting system
- Faulty starter motor
- Faulty starter relay
- Faulty starter clutch

EAS00847
INCORRECT ENGINE IDLING SPEED

ENGINE

Cylinder and cylinder head
- Incorrect valve clearance
- Damaged valve train components

Air filter
- Clogged air filter element

FUEL SYSTEM

Carburetor
- Faulty starter plunger
- Loose or clogged pilot jet
- Loose or clogged pilot air jet
- Damaged or loose carburetor joint
- Improperly adjusted engine idling speed (throttle stop screw)
- Improper throttle cable free play
- Flooded carburetor

Autochoke unit
- Faulty starter plunger
- Faulty ignitor unit

ELECTRICAL SYSTEMS

Battery
- Discharged battery
- Faulty battery

Spark plug
- Incorrect spark plug gap
- Incorrect spark plug heat range
- Fouled spark plug
- Worn or damaged electrode
- Worn or damaged insulator
- Faulty spark plug cap

Ignition coil
- Faulty spark plug lead

Ignition system
- Faulty ignitor unit
- Faulty pickup coil

EAS00848
POOR MEDIUM-AND-HIGH-SPEED PERFORMANCE

Refer to “STARTING FAILURE/HARD STARTING” section.

ENGINE

Air filter
- Clogged air filter element

FUEL SYSTEM

Carburetor
- Faulty diaphragm
- Incorrect fuel level
- Loose or clogged main jet

EAS00853
FAULTY CLUTCH

ENGINE OPERATES BUT SCOOTER WILL NOT MOVE

V-belt
- Bent, damaged or worn V-belt
- Slipping V-belt

Primary pulley cam and primary pulley slider
- Damaged or worn primary pulley cam
- Damaged or worn primary pulley slider

Clutch spring(s)
- Damaged clutch spring

Transmission gear(s)
- Damaged transmission gear

CLUTCH SLIPS

Clutch shoe spring(s)
- Damaged, loose or worn clutch shoe spring

Clutch shoe(s)
- Damaged or worn clutch shoe

Primary sliding sheave
- Seized primary sliding sheave

POOR STARTING PERFORMANCE

V-belt
- V-belt slips
- Oil or grease on the V-belt

Primary sliding sheave
- Faulty operation
- Worn pin groove
- Worn pin

Clutch shoe(s)
- Bent, damaged or worn clutch shoe

POOR SPEED PERFORMANCE

V-belt
- Oil or grease on the V-belt

Primary pulley weight(s)
- Faulty operation
- Worn primary pulley weight

Primary fixed sheave
- Worn primary fixed sheave

Primary sliding sheave
- Worn primary sliding sheave

Secondary fixed sheave
- Worn secondary fixed sheave

Secondary sliding sheave
- Worn secondary sliding sheave

EAS00855
OVERHEATING

ENGINE

Clogged coolant passages

Cylinder head and piston
- Heavy carbon buildup

Engine oil
- Incorrect oil level
- Incorrect oil viscosity
- Inferior oil quality

COOLING SYSTEM

Coolant
- Low coolant level

Radiator
- Leaking coolant system
- Damaged or leaking radiator
- Faulty radiator cap
- Bent or damaged radiator fin

Water pump
- Damaged or faulty water pump

Thermostat
- Thermostat stays closed

FUEL SYSTEM

Carburetor
- Incorrect main jet setting
- Incorrect fuel level
- Damaged or loose carburetor joint

Air filter
- Clogged air filter element

CHASSIS

Brake(s)
- Dragging brake

ELECTRICAL SYSTEMS

Spark plug
- Incorrect spark plug gap
- Incorrect spark plug heat range

Ignition system
- Faulty ignition unit

EAS00856
OVERCOOLING
COOLING SYSTEM
- Thermostat
- Thermostat stays open

EAS00859
POOR BRAKING
Disc brake
- Worn brake pad
- Worn brake disc
- Air in hydraulic brake system
- Leaking brake fluid
- Faulty brake caliper kit
- Faulty brake caliper seal
- Loose union bolt
- Damaged brake hose
- Oil or grease on the brake disc
- Oil or grease on the brake pad
- Incorrect brake fluid level

Drum brake
- Worn brake shoe
- Worn or rusty brake drum
- Incorrect brake camshaft lever position
- Incorrect brake shoe position
- Damaged or fatigued brake shoe spring
- Oil or grease on the brake shoe
- Oil or grease on the brake drum
- Broken brake torque rod
- Improper brake lever adjustement

EAS00860
FAULTY FRONT FORK LEGS
LEAKING OIL
- Bent, damaged or rusty inner tube
- Cracked or damaged outer tube
- Improperly installed oil seal
- Damaged oil seal lip
- Incorrect oil level (high)
- Loose damper rod assembly bolt
- Damaged damper rod assembly bolt copper washer
- Cracked or damaged cap bolt O-ring
- Loose drain bolt
- Damaged drain bolt gasket

MALFUNCTION
- Bent or damaged inner tube
- Bent or damaged outer tube
- Damaged fork spring
- Worn or damaged outer tube
- Bent or damaged damper rod
- Incorrect oil viscosity
- Incorrect oil level

EAS00862
UNSTABLE HANDLING

Handlebar
- Bent or improperly installed handlebar

Steering head components
- Improperly installed lower bracket (improperly tightened ring nut)
- Bent steering stem
- Damaged ball bearing or bearing rac

Front fork leg(s)
- Uneven oil levels (both front fork legs)
- Unevenly tensioned fork spring (both front fork legs)
- Broken fork spring
- Bent or damaged inner tube
- Bent or damaged outer tube

Swingarm
- Worn bearing or bushing
- Bent or damaged swingarm

Rear shock absorber assembly
- Faulty rear shock absorber spring
- Leaking oil or gas

Tyres
- Uneven tyre pressures (front and rear)
- Incorrect tyre pressure
- Uneven tyre wear

Wheels
- Incorrect wheel balance
- Deformed cast wheel
- Damaged wheel bearing
- Bent or loose wheel axle
- Excessive wheel runout

Frame
- Bent frame
- Damaged steering head pipe
- Improperly installed bearing race

EAS00866
FAULTY LIGHTING OR SIGNALING SYSTEM

HEADLIGHT DOES NOT LIGHT
- Wrong headlight bulb
- Too many electrical accessories
- Hard charging
- Incorrect connection
- Improperly grounded circuit
- Poor contacts (main or light switch)
- Burnt-out headlight bulb

HEADLIGHT BULB BURNT OUT
- Wrong headlight bulb
- Faulty battery
- Faulty rectifier/regulator
- Improperly grounded circuit
- Faulty main switch
- Faulty light switch
- Headlight bulb life expired

TAIL/BRAKE LIGHT DOES NOT LIGHT
- Wrong tail/brake light bulb
- Too many electrical accessories
- Incorrect connection
- Burnt-out tail/brake light bulb

TAIL/BRAKE LIGHT BULB BURNT OUT
- Wrong tail/brake light bulb
- Faulty battery
- Incorrectly adjusted rear brake light switch
- Tail/brake light bulb life expired

TURN SIGNAL DOES NOT LIGHT
- Faulty turn signal switch
- Faulty turn signal relay
- Burnt-out turn signal bulb
- Incorrect connection
- Damaged or faulty wire harness
- Improperly grounded circuit
- Faulty battery
- Blown, damaged or incorrect fuse

TURN SIGNAL BLINKS SLOWLY
- Faulty turn signal relay
- Faulty main switch
- Faulty turn signal switch
- Incorrect turn signal bulb
- Faulty charging circuit

TURN SIGNAL REMAINS LIT
- Faulty turn signal relay
- Burnt-out turn signal bulb

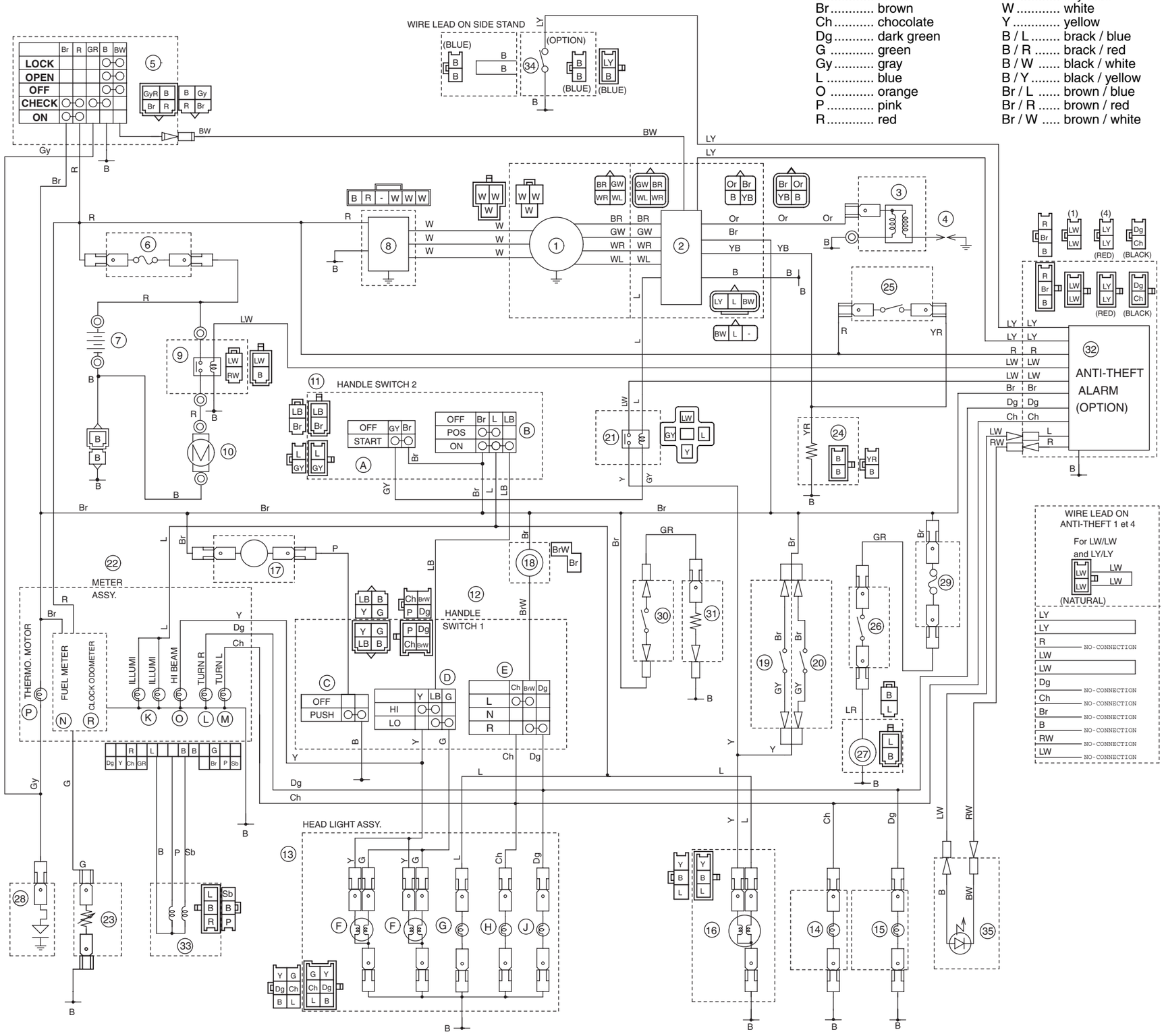
TURN SIGNAL BLINKS QUICKLY
- Incorrect turn signal bulb
- Faulty turn signal relay
- Burnt-out turn signal bulb

HORN DOES NOT SOUND
- Improperly adjusted horn
- Damaged or faulty horn
- Faulty main switch
- Faulty horn switch
- Faulty battery
- Blown, damaged or incorrect fuse
- Faulty wire harness

XN125-150 WIRING DIAGRAM

COLOR CODE

B ..... black	Sb ..... sky blue	G / R ..... green / red	R / L ..... red / blue
Br ..... brown	W ..... white	G / W ..... green / white	R / W ..... red / white
Ch ..... chocolate	Y ..... yellow	G / Y ..... green / yellow	R / Y ..... red / yellow
Dg ..... dark green	B / L ..... brack / blue	L / B ..... blue / black	W / B ..... white / black
G ..... green	B / R ..... brack / red	L / R ..... blue / red	W / G ..... white / green
Gy ..... gray	B / W ..... black / white	L / W ..... blue / white	W / Y ..... white / yellow
L ..... blue	B / Y ..... black / yellow	L / Y ..... blue / yellow	Y / B ..... yellow / black
O ..... orange	Br / L ..... brown / blue	O / R ..... orange / red	Y / L ..... yellow / blue
P ..... pink	Br / R ..... brown / red	R / B ..... red / black	
R ..... red	Br / W ..... brown / white	R / G ..... red / green	



1. CDI MAGNETO
2. CDI UNIT
3. IGN COIL
4. SPARK PLUG
5. MAIN SWITCH ASSY.
6. FUSE(MAIN)
7. BATTERY
8. RECTIFIER/REGULATOR
9. STARTER RELAY
10. STARTING MOTOR
11. HANDLE SWITCH (2)
   - (A) STARTER SWITCH
   - (B) LIGTING SWITCH
12. HANDLE SWITCH (1)
   - (C) HORN SWITCH
   - (D) DIMMER SWITCH
   - (E) FLASHER SWITCH
13. HEAD LIGHT ASSY.
   - (F) HEAD LIGHT 2X12V-35X35W
   - (G) POSITION LAMP 12V-5W
   - (H) FR FLASHER L 12V-21W
   - (J) FR FLASHER R 12V-21W
14. RR FLASHER L 12V-10W
15. RR FLASHER R 12V-10W
16. TAIL/STOP LIGHT 12V-5/21W
17. HORN
18. FLASHER RELAY
19. FRONT STOP SWITCH
20. REAR STOP SWITCH
21. RELAY
22. METER ASSY.
   - (K) METER LIGHT 2X12V-1.2W
   - (L) FLASHER INDICATOR R 12V-1.2W
   - (M) FLASHER INDICATOR L 12V-1.2W
   - (N) FUEL METER
   - (O) HIGH BEAM INDICATOR 12V-1.2W
   - (P) TH. WATER INDICATOR
   - (R) CLOCK AND ODOMETER
23. SENDER
24. AUTO CHOKE
25. TH.SWITCH AUTO CHOKE
26. TH. SWITCH FAN
27. FAN
28. TH. SWITCH WATER
29. FUSE FAN
30. TH.SWITCH CARB.HEATER
31. CARB.HEATER
32. ANTI THEFT UNIT (OPTION)
33. SENSOR SPEED
34. SIDE STAND SW. (OPTION)
35. LED (OPTION)